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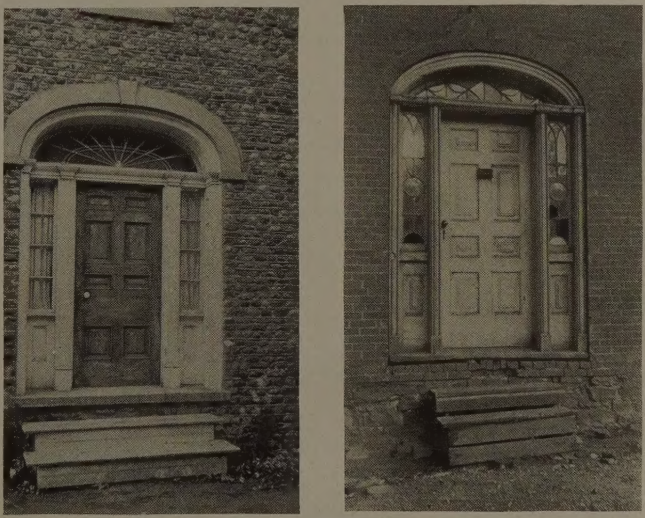
Early Architecture in Western New York

By Benj. F. Betts

During the year Mr. Betts will furnish us with a number of measured drawings of most interesting details.

WESTERN New York, while hardly rich in so called Colonial architecture, affords some interesting illustrations. Many of the best examples have been altered, demolished to make way for new buildings or otherwise destroyed. The present series of measured details was begun with the idea of preserving a record of those that have so far escaped destruction and to present some of our early American architecture from a locality not so widely known as New England. Although it may seem to show a decided contrast to other early settled parts of the country, a careful study of the subject will disclose the influences of the East and South. Certainly many of the remaining examples are not of the delicate and refined character found in New England and some of the Southern sections, but they do seem worth preserving for future comparisons and references. We cannot criticize the architecture of Western New York nor judge it with appreciative fairness without some knowledge of the local history.



DOORWAYS—SEE PLATES II AND III.

Architecturally, the richest section is the beautiful Genesee Valley and the country somewhat farther east, for there is little of interest remaining west of the Genesee River. The first white man to visit this section, the home of the Senecas, is said to have been Father Daillon, a French missionary who came in 1626. For about 100 years after LaSalle's visit in 1669 this region was the scene of continuous warfare between the white men and the Indians and it was not until a number of years after the treaty of 1763 that the power of the Iroquois was broken.

After the Revolution Oliver Phelps and Nathaniel Gorham purchased about 2,000,000 acres east of the Genesee which lead to the settlement of this district. The fact that the Indians were reluctant to give up any land west of the river accounts for the still further retarded development in that direction. In 1790, Phelps and Gorham sold half of their property to Robert Morris who, in turn, sold it to London capitalists headed by Sir William Pultney. Since, at that time, aliens were not allowed to hold property, Pultney was represented by Captain Charles Williamson, a man of courage and untiring energy. He directed his efforts toward getting important roads cut through the wilderness and toward inducing men to take up land and settle the country. It must have taken no little courage for those early settlers to leave their homes and friends and transport their necessary possessions to a country beset with dangers and hardships almost unimaginable today; for, although the Indian title was practically extinguished in 1788, the country remained fairly wild for twenty years after. By 1790 mills were being operated on the Genesee River and settlers were building their log cabins that were later to be replaced by more pretentious homes. It was a land greatly favored by nature. Captain Williamson, who had seen the best land in England, wrote that the worst of the Genesee Valley was superior to any country he had ever seen. The new settlers continued fruit farming which had been started by the Iroquois who were so far advanced that they were much more dependent upon their crops than upon hunting.

The falls of Niagara and of the Genesee attracted

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many retired soldiers, writers and travelers. In spite of the drawbacks of Indian warfare and of the war of 1812, the country seemed destined to grow and prosper. The census report of the city of Rochester shows that in 1815 there were 331 inhabitants, while about ten years later the number had increased to 7,669. With better trading facilities afforded by the completion of the Erie Canal in 1825, the growth of the country proved that Western New York was quick to perceive where her prosperity lay and to seize her opportunities.

This brief outline of the early history of the western part of the State explains why we can expect to find little, if any, work of any architectural value before 1800. What does remain of any colonial character is of the period of 1800 and 1840. Toward the end of this period we find the influence of the Greek or Classic revival and by 1840 that style was at its height. The heavy, coarsely detailed mouldings, columns and pilasters show a marked contrast to the naive qualities and refinement of the earlier work and can hardly be favorably compared with the best of the Eastern work that was at least forty years earlier. As the first settlers came from various parts of the country—Maryland, Virginia, Pennsylvania, Long Island and New England—we find the architecture of Western New York influenced by the types found in the States from which they emigrated.

In Geneva, where many from Virginia and Maryland settled in the first quarter of the nineteenth century, we notice a strong Southern influence in the pillared porticos running through two stories. A few houses with the flat boarded front and clapboard sides show Dutch tendencies. Two Hobart College Buildings, Geneva Hall, built 1821, and Trinity Hall built in 1827, are interesting examples of the use of local stone, quite beautiful in color, but they contain little detail of architectural interest. The Pultney land office on Washington Street is of historical interest. It is built of local stone and has four wood columns supporting the pediment that shades the front windows of the second floor. Not far from Geneva is Waterloo, a village containing a number of old buildings that are somewhat interesting. Along the road from Geneva to Canandaigua we find a few old farm houses, some of them belonging to the days of the Greek revival. Many of them are in quite picturesque settings and are quite charming in mass. At Canandaigua the Dutch influence is more pronounced. Some of the houses are of brick with the typical Dutch gable while others are frame buildings with flat boarded sides toward the street and the ends and rear clapboarded.

As we go farther west we notice a greater influence of the New England builders. Outside of the city of Rochester, especially at Henrietta, are a number of houses of cobble stones or "hard heads" and a few of brick. Of course, a few of these are also found in the outlying districts of the other cities in this locality. These cobble stone houses are especially interesting because of their wide range of color in varying shades of gray, brown, yellow and red. The stones for the exterior were selected for size as they came from the field and laid in courses of about three inches with fairly wide mortar joints. The larger and more uneven stones were used as a backing and in the foundations. In almost every case the corners are formed of quarry stone quoins. This same stone is sometimes used for base or sill courses or water table and lintels over doors and windows. The latter were in some cases of one piece, in others an arch was formed of smaller stones on edge. The elliptical arches of the entrance door were made of the same material with a key and impost blocks. The builders naturally used the material nearest at hand and most easily obtained. Where clay fields were near by we find the brick house while in other sections frame dwellings predominate. Since the early homes were simple in detail and decorative features, they depended largely for their attractiveness upon their natural setting, the excellence of proportion and the relation of wall space and window area. The windows invariably were made of small panes of glass varying in number from twelve to fifteen, twenty or twenty-four. Occasionally small openings covered with iron grilles occur in the frieze of the cornice. The green blinds are always in evidence, many of them still hanging on the old hand-wrought strap hinges. The outside window casings of the frame houses were moulded and mitred or formed of pilasters with a cornice forming the head cap. The corner boards were plain, moulded or perhaps fairly wide pilasters. The gambrel roof is seldom seen in this locality, the majority being gabled and of fairly flat pitch. From the road you see a rather broad expanse of shingle roof seldom interrupted with dormers.

In most cases the typical Colonial plan was used, with its center stair hall with rooms to either side and a wing extending to the rear and at right angles to the main portion of the house. This wing contained the kitchen or perhaps the dairy room or dining room and kitchen. In some instances we find evidence that a room in the cellar was used as a kitchen or dairy room. This contained a large brick fireplace with the old iron pot hooks and bake oven built in at the side. Mantels were simple indeed; some with a simple mould framing the brickwork, others a little more elaborate but simply detailed with shelf and pilasters or delicate columns at the side. The stairways followed the rest of the house in character; tapered balusters, square, round or oval in section, occasionally turned and slightly moulded; oval round hand rails; outside strings perfectly plain or with a simple panel or strap pattern. The newel appears in many varieties; turned and moulded, square and tapered or elaborately carved. In a number of cases the balusters start on the first step in a simple but beautiful spiral with a small iron newel in the center to give rigidity. The stairs show variety in plan—semi-circular, straight run, two-flight or curving at the top to meet whatever conditions were found necessary. The rise and tread is easy and comfortable, generous space always being allotted to the stairway. New England influence is recognized in the hall arches with pilasters and "bat wing" spandrels, or Dutch types in the turn posts supporting the arch. Doors are well proportioned, generally six feet ten inches high with six panels and a small brass knob or door latch. Door jambs in thick walls are panelled to correspond with the door panels. Window jambs in similar walls were splayed and panelled, sometimes the jamb extending to the floor with a panel below the window. Again we find the windows in three sash extending to the floor or in two sash with a panel below hinged to swing in to allow passage to the porch directly from the room. Casings were moulded in seemingly endless ways. Some were mitred at the corners, others were butted into corner blocks. The base which stopped on the casing or a plinth at the openings followed the casings in character with simple mouldings, perhaps with the addition of a simple carved pattern. In the more pretentious house we see the wood or plaster cornice carefully proportioned to the room. One room of a house seen at Henrietta still retains the original painted stencil work with which the walls were decorated. Another in Canandaigua contains some of the old scenic wall paper imported before wall paper was made in this country, but undoubtedly, of later date than the house itself

The entrance doorway always warrants careful attention. It is quite evident that the builder spent considerable thought and effort upon it. One could never mistake it for anything but the principal entrance. It is true that the mouldings were sometimes crude and coarse, yet the entrance, as a unit, cannot fail to attract us and arouse our admiration, with its naive quality. In general character and appearance many of them are quite similar and at first glance appear like many others we have seen before, but upon examination we find them quite different in detail. The door mullions were ornamented with moulded pilasters or perhaps columns with the transom bar forming a small cornice, which sometimes recalled the principal cornice of the house. Very few of the fan lights of this locality contained leaded work, the majority being formed of straight or bent bars of wood about five-sixteenths of an inch in thickness, radiating from a lead ornament generally in the form of a basket of flowers. Smaller lead ornaments or floral, leaf, or ribbon patterns, painted or gilded were tacked at the intersection of the bars. The side lights were left plain or decorated in a manner similar to that of the fan light. The glass, wavy and full of imperfections, seems thoroughly in character with its surroundings.

The originality and ingenuity shown by our early workmen in coping with unexpected or awkward conditions and the excellent use of the materials at hand is certainly worthy of praise and study. One is amply repaid the time spent in observing and studying even the simplest example.

Since drawings say so much more than words the writer has refrained from making reference to or criticism of any definite plate, preferring to let the reader form his own opinion. If they arouse in others the same interest and inspiration from their study that the author has received they will have partly fulfilled their purpose.

The Central Branch Building of the Brooklyn Young Men's Christian Association

Trowbridge & Ackerman, Architects

THE practice of medicine is, in a way, analagous to the practice of architecture. Most doctors in general practice expect to treat all classes of ailments which do not require the services of a specialist. When the malady is serious and appears to demand the advice or the surgical skill of an expert who specializes, a careful doctor does not hesitate to bring into the case the particular kind of technical skill which fits the problem in hand. Similarly an Architect undertakes to care for a large variety of problems without engaging expert consulting assistance. The demands of modern living have brought the Architect's practice to a point where it is impossible for him to do without the services of consulting engineers on all problems save the very simplest. There are so many other details requiring the utmost care and vigilance which are strictly in the field of the Architect's jurisdiction, the presence of a consulting engineer who does much more than "consult" is a source of comfort and security to Architect and owner.

The building illustrated in this issue, erected to serve for many years as the headquarters of the Brooklyn Association, is an excellent illustration of the need and the value of the services of consulting engineers. The Architects worked for a year on the study of the floor plans, commencing with a fundamental consideration of the placing of the steel columns. A brief study of the position of the men's swimming pool on the third floor and the three gymnasiums on the fifth floor, with six floors over the gymnasiums will suffice to show that the problem was not in the A-B-C's of steel construction. The Gunvald Aus Co. advised and helped from the beginning and in due time prepared detailed plans and specifications for the steel framing and foundations. In the same way Albert Webster planned and specified the plumbing equipment and Henry C. Meyer, Jr., with his associate, Bassett Jones, cared for heating, ventilation and electric wiring. A little further study of the plans, bringing to light the two swimming pools, the many toilet and shower rooms, the dormitory rooms supplied with lavatories, and the drinking fountains, not to mention the driven well, filters, water softeners, circulating pumps, storage tanks, hot water circulating plant, etc., not appearing among these illustrations, gives some idea of Mr. Webster's problem. Similarly the necessity of designing a steam plant to furnish live steam for heating water used in pools, showers, lavatories, etc., and for running the electric generators, and exhaust steam for heating the building, and the placing of fans, ducts, etc., for ventilating give an outline of Mr. Meyer's problem. To Mr. Jones was given the task of planning the wiring and lighting throughout, with the consequent necessity of providing current enough for many motors in the sub-basement, for fans on the eighth floor and a full load of interior and exterior lighting.

These mechanical details are mentioned first because they are the vitals of the building. No matter how convenient a plan is or how beautiful the architectural setting may be in the minds of the Architects, the first consideration, simultaneously with the study of arrangement of rooms, should be given to the skeleton frame work, the heart, the arteries and veins, the lungs and the intestines of a building. The analogy to the work of a physician is not so far fetched after all when one considers how like a human body a modern building is.

The Architect has his troubles in satisfying the very many peculiar conditions of a Y. M. C. A., for after a floor plan has been found which is satisfactory, he is confronted with the task of expressing on the exterior a building of semi-public character which possesses the attributes of a social club, an educational institution, a hotel and an athletic association. The six floors of sleeping rooms have a greater influence upon the exterior than any other element or sub-division of the plan; consequently the Architects felt that the scale of the exterior should be influenced by the dormitories while the "character" should be domestic, in so far as a building of such a size could be made to appear domestic.

In planning a large piece of monumental architecture, such as a library, an art museum or a State capitol, the "plan" which expresses frequently the solution of the entire problem is shown in one drawing, the plan of the main floor. In this Y. M. C. A. building the "plan" must be studied by constantly comparing one floor with another so as to comprehend how the questions of circulation and light were solved and how the many exacting requirements of, for example, the physical department shown on the third, fourth and fifth floors, were met.

The principal features of the building which are not or cannot be shown in the floor plans illustrated herewith are as follows:

Three large high pressure boilers supplying live steam to electrical generators, laundry, kitchen steam table, dish washer, and to the hot water circulating plant, while exhaust steam heats the building. An automatic valve admits live steam to the heating system when the pressure of the exhaust steam drops below a certain point. The hot water plant contains six tanks with a total capacity of 8,700 gallons per hour. It is calculated that the amount of hot water used per day is approximately 52,000 gallons. A twelve inch well was driven on the site which supplies 9,000 gallons per hour, and as this well water is hard, a large softening plant had to be installed. To operate the softener requires the use of 1,500 lbs. of salt per day. A refrigeration plant keeps all refrigerators cooled, makes all the ice required and admits of iced drinking water delivered on all floors. A vacuum cleaning plant with about fifty outlets or connections is a useful feature of the equipment. In addition to the above there are about forty motors of various sizes, a machine shop equipped with lathes and other machinery for repair work, a shop for painting and carpenter work, etc. From twelve to fifteen tons of coal are consumed each day.

The building was erected by The Whitney Co., of New York under a "cost plus fixed fee" form of contract. By this process the building committee was able to weigh the merits of many competing sub-estimates and many kinds of building materials. This form of contract, while imposing a much greater amount of work upon both Architects and committee, permitted a greater freedom of choice in determining the various classes of materials to use.

To quote from one of the secretaries: "The building has been scientifically furnished." The Barnet Phillips Co. was engaged to assist in very much the same manner as were the consulting engineers. Plans for furnishing layouts were prepared with a complete list of requirements and a budget of expense laid before a special furnishing committee. After detailed scrutiny and discussion of the layout as a whole, authorization was given to prepare scale and full size details of furniture, and secure competitive bids directly with the manufacturers. No attempt was made to use old or second hand articles. The work was prodigious as must appear from a glance at the following brief outline of the materials purchased:

Furniture, such as tables, chairs, sofas, settees, desks, drawing tables, stools, wall cabinets, beds, chiffoniers, medicine cabinets, bookcases, magazine racks, checker tables, dressing tables, beds, massage benches, barber chairs, upright and grand pianos, billiard tables, victrolas, etc. Other articles of equipment not listed as furniture are as follows: Seat cushions, fibre receptacles such as waste and laundry baskets, wheel hampers, etc.; brush and rubber matting, toilet fittings, china and glassware, silver for restaurant, linen, including bed clothes, towels, etc., cash registers, window shades, curtains, rugs and carpets, linoleum, soap dispensers, towel cabinets, soap dishes, bath hooks, mirrors, towel bars, cabinet paper fixtures, desk lamps, fire sets, cafeteria trays and many other articles too numerous to mention but all requisite for a completely equipped building.

From the above it will appear evident that this is a work of specialists. The owners and the Architects were safeguarded by this process of caring for the furnishings. The owner finds that the character of goods purchased and designed is neither too elaborate nor too costly for a Y. M. C. A. building, while the Architects have the very great satisfaction of being able to pass upon all designs prepared, so as to avoid the installation of furnishings out of harmony with the interior finish already contracted for. Most of the furniture was made to order from scale and full size details. The quantities were sufficiently large to permit this special study without its costing more than to purchase stock goods.

The officers of the Central Branch state that this is the largest and the most completely equipped Y. M. C. A. building in the world. Certain it is that it would be hard to find a more active or enthusiastic community, for there is "something doing" all the time. As a means of providing a home for young men, giving them educational and physical advantages in the midst of a Christian atmosphere it is a wonderful demonstration of the power of money for doing good when wisely expended.

Engineering Coefficients

By DeWitt Clinton Pond, M. A.

Mr. Pond has charge of the practical course in Architectural Engineering at Columbia University. He is the author of "Engineering for Architects," recently published in book form, the same being a series of articles formerly appearing in ARCHITECTURE.

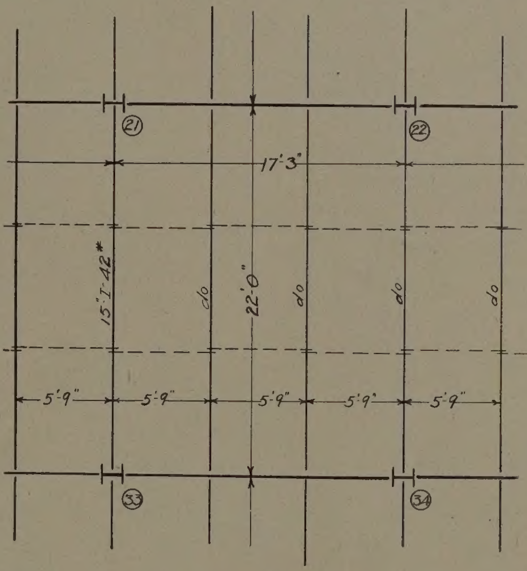
THE layman is often discouraged in attacking engineering problems because of the long and imposing words found in text books and hand books. Universities and schools seem to encourage the use of such words and unfortunately help to throw an atmosphere of mystery around knowledge. This atmosphere should never exist.

One of the words found in engineering practice is "coefficient." Funk and Wagnalls Dictionary defines this word as "a number or letter put before an algebraic expression which is to be multiplied by that number." This definition becomes clear when illustrated by an example.

The formula that gives the maximum tendency of a beam to bend under a uniformly distributed load is $M = \frac{1}{8} Wl$, in which W is the total distributed load and l is the span in inches. In this formula $\frac{1}{8}$ is the coefficient—the number—placed before the algebraic expression—Wl. The fraction never varies although W may be any load and the span may be short or long, depending upon structural conditions.

Another coefficient may be used in connection with the above formula if the span is to be measured in feet. The formula may be written $M=\frac{1}{8}WL\times 12$, or $M=12/8\ WL$. This may be expressed $M=3/2\ WL$ in which M will be measured in inch pounds as usual, L will be the span *in feet,* and 3/2 is the coefficient.

Another coefficient is found in the formula $M=S\ I/c$, which gives the *resisting* moment, or tendency to bend, of the beam. In articles which have appeared in previous issues of ARCHITECTURE the author showed that S is the safe working stress of the material of which the beam is made, that I is the "moment of inertia," and c is the distance from the centre of gravity of the section of the beam to the most remote fibre. In the case of a steel beam S is the safe working stress of steel or 16,000 pounds per square inch. This never varies and can be used as a coefficient. The formula then becomes $M=16{,}000\ I/c$.



SECTION OF PLAN

It is possible to combine the two formulas and determine other coefficients which will be shown to be of material assistance to the engineer. If a beam is to resist the tendency to bend the resisting ability of the beam must equal the bending ability of the load. The two M's must equal each other, or, $M=\frac{1}{8}Wl=S\ I/c$. If the coefficients found above are used, the relation can be expressed $3/2\ WL=16{,}000\ I/c$, and $WL=2/3\times 16{,}000\times I/c$.

For any particular beam the fraction expressed by the algebraic expression I/c can be found in the hand-books. In the Cambria hand-book, under the heading, "Properties of Standard Sections," I/c—known as the *section modulus*—is found for any particular beam in column eight of the tables. For a 12-inch, 31½-pound I-beam, this section modulus is found to be 36. If L is placed on the right hand side of the equation, and 36 is substituted for I/c, the above relation can be expressed $W=(2/3\times 16{,}000\times 36)\div L$. W, being the total uniformly distributed load, can be found for a 12-inch, 31½-pound I-beam to be $384{,}000\div L$. 384,000 is the coefficient and is known as the "Coefficient of Strength," of this particular beam. Other beams have other coefficients of strength and these can be found in the Cambria hand-book in the tables referred to above, on page 164 of the 1914 edition, column 13.

The question naturally arises, what is the use of this coefficient? The obvious answer is that from it can be found the safe load any beam will carry. An 18-inch, 60-pound I-beam has a coefficient of strength of 997,680. For a span—L—of 20 feet the safe load will be $997{,}680\div 20=49{,}884$ pounds. This can be checked from the table of safe loads in pounds for Cambria I-beams.

But as there already exist tables of safe loads on beams this particular use of the coefficient of strength will seem to be of little value. There is another use that some engineers make of it that is more practical.

If the table of safe loads is not used, the method of determining the size of a beam to carry a certain load is often as follows: given the load, substitute for W in the formula $M=\frac{1}{8}Wl$, and make this equal to $16{,}000\ I/c$. Suppose it is necessary to find the beam that will carry a load of 50,000 pounds over a span of 19 feet. $W=50{,}000$, $l=19\times 12$ inches, and the equation can be written, $M=\frac{1}{8}\times 50{,}000\times 19\times 12=16{,}000\times I/c$. From this will be found a value of 89 for I/c. Looking in the hand-book it will be found that an 18-inch, 55-pound I-beam will have a section modulus of 88.4 and this beam can be selected for this condition.

By using the coefficient of strength much of the above work can be eliminated. It was found that WL equaled the coefficient, or W equaled the coefficient divided by the span—L. If the load—W— is 50,000 pounds, and the span is 19 feet, the coefficient will be $50{,}000\times 19=950{,}000$. In the hand-book the co-efficient for an 18-inch, 55-pound I-beam will be found to be near enough.

The method of determining the beam by means of the coefficient is simply to multiply the load by the span in feet and the product will be the coefficient. The method is by no means difficult and is employed often in place of the table of safe loads. Its application in the case of beams in a floor panel can be shown by the following example. The arrangement shown in the figure shows the filling-in beams as 22 feet long and spaced 5 feet, 9 inches on centres. The floor load can be considered as 175 pounds per square foot, and the load on each beam will be $22\times 5.75\times 175=22{,}137$ pounds. The coefficient will be $22{,}137\times 22=487{,}025$. The beam that has the next higher coefficient of strength is a 15-inch, 42-pound I-beam, and this will be used.

An explanation of how the coefficient of strength is obtained for a given beam is found in the Cambria Steel Company's hand-book under the title of "Explanations of the Tables of Properties of Standard I-beams, Channels, and Angles," which can be found on page 158 of the 1914 edition.

For steel beams that always have the same sections, it is a comparatively easy matter to determine the coefficient of strength. For wood beams the method is the same but as the section modulus changes for each beam the resulting formula, in which the coefficient occurs, is not as simple. For steel the formula is $WL=F$, in which F is the coefficient. For wood it becomes $WL=F\ bd^2$, in which b is the breadth of the beam and d is the depth. The value of F depends upon the kind of wood that is to be used in the beam.

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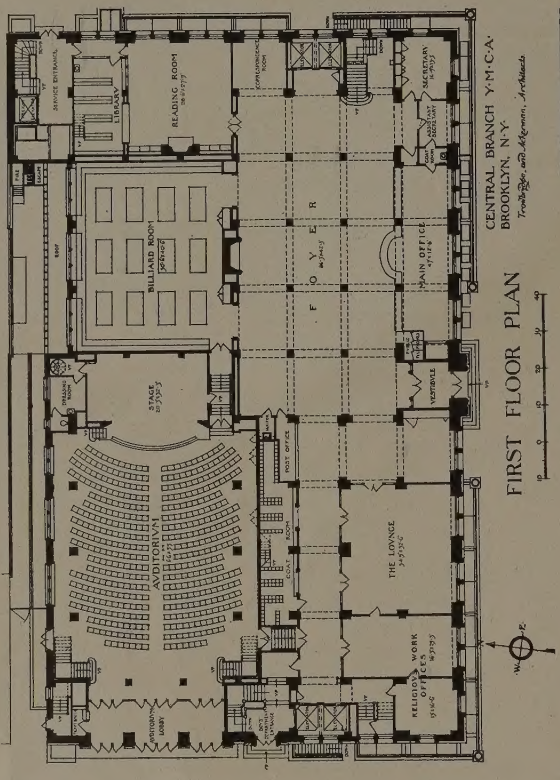

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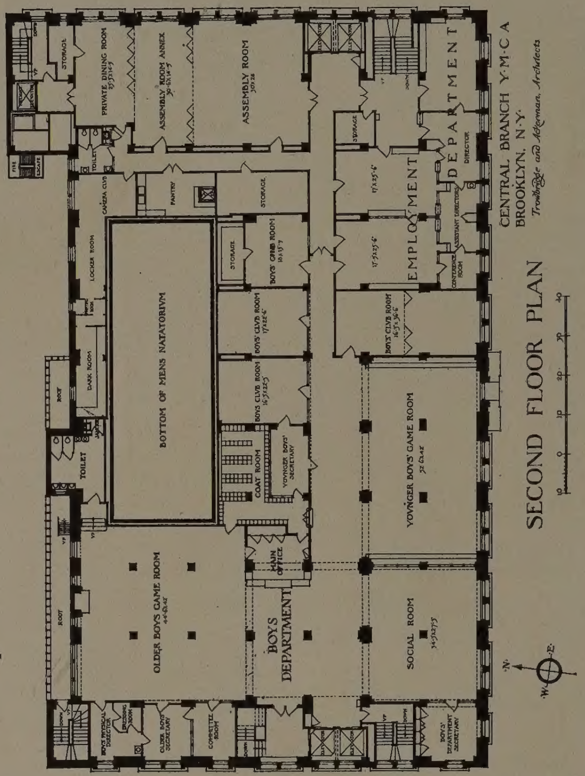
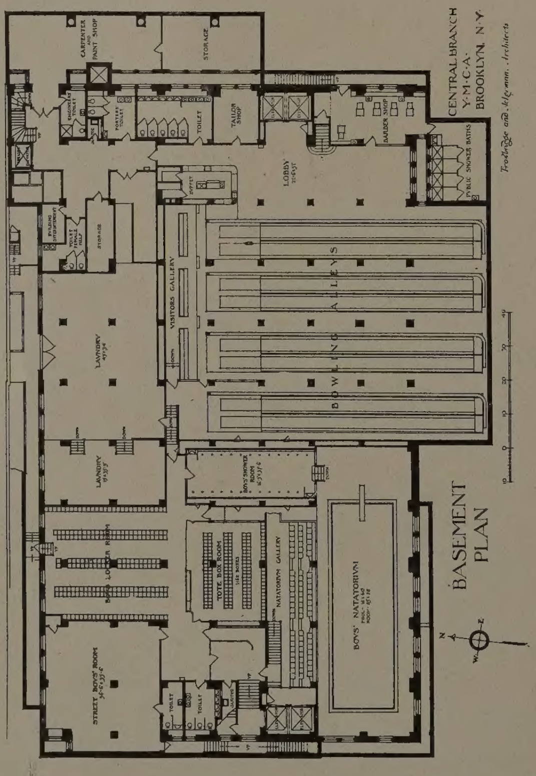
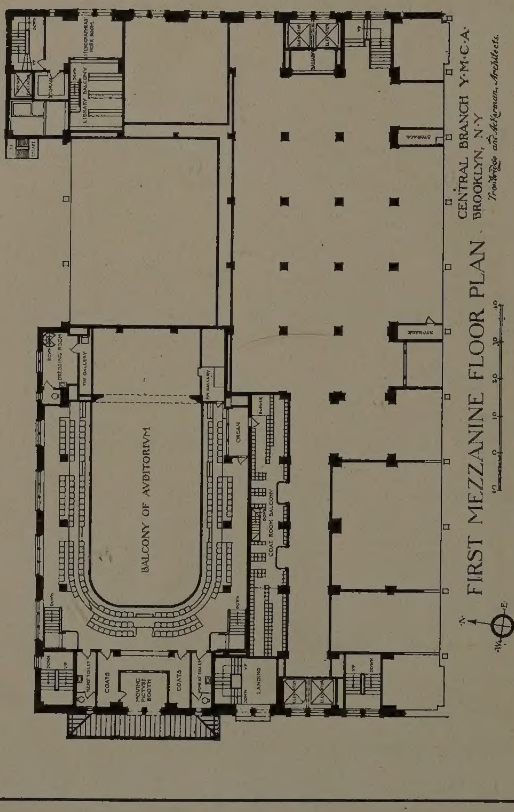


SECOND FLOOR PLAN



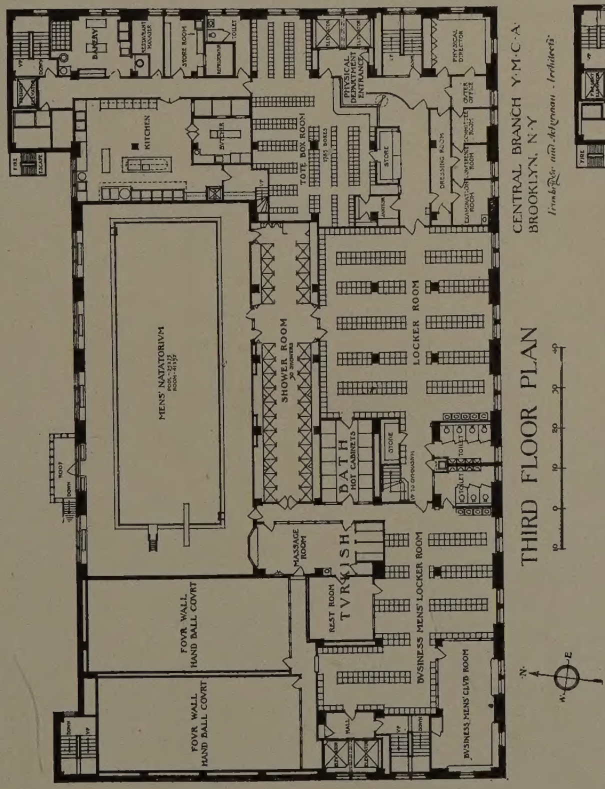
BASEMENT PLAN



FIRST MEZZANINE FLOOR PLAN

PLANS, CENTRAL BRANCH BUILDING, Y. M. C. A., BROOKLYN, N. Y.

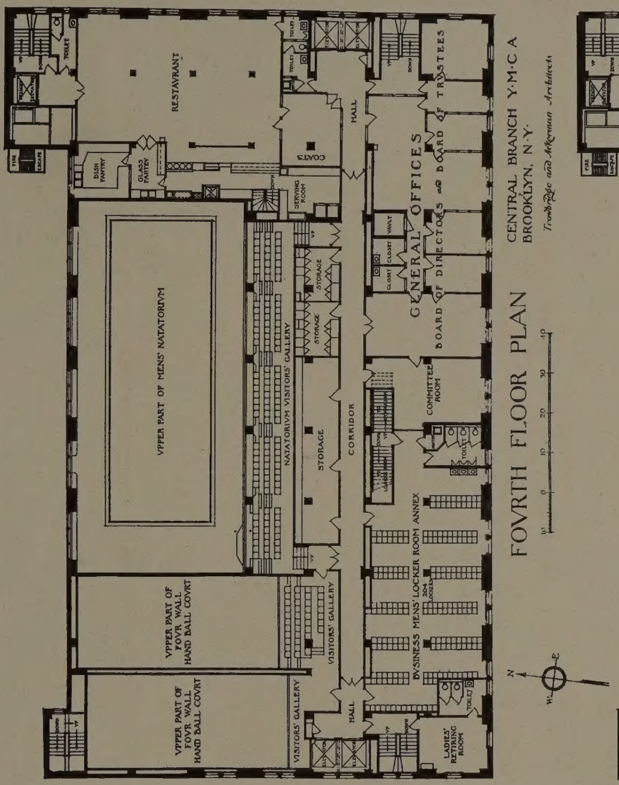
Trowbridge & Ackerman, Architects.



THIRD FLOOR PLAN

CENTRAL BRANCH Y·M·C·A·
BROOKLYN, N·Y

Trowbridge and Ackerman Architects


RESTAURANT
DISH PANTRY
GLASS PANTRY
SERVING ROOM
COATS
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NATATORIVM VISITORS' GALLERY
STORAGE
CORRIDOR
VPPER PART OF FOVR WALL HAND BALL COVRT
VPPER PART OF FOVR WALL HAND BALL COVRT
VISITORS' GALLERY
GENERAL OFFICES
BOARD OF DIRECTORS AND BOARD OF TRUSTEES
COMMITTEE ROOM
BVSINESS MENS' LOCKER ROOM ANNEX
LADIES' RETIRING ROOM
TOILET
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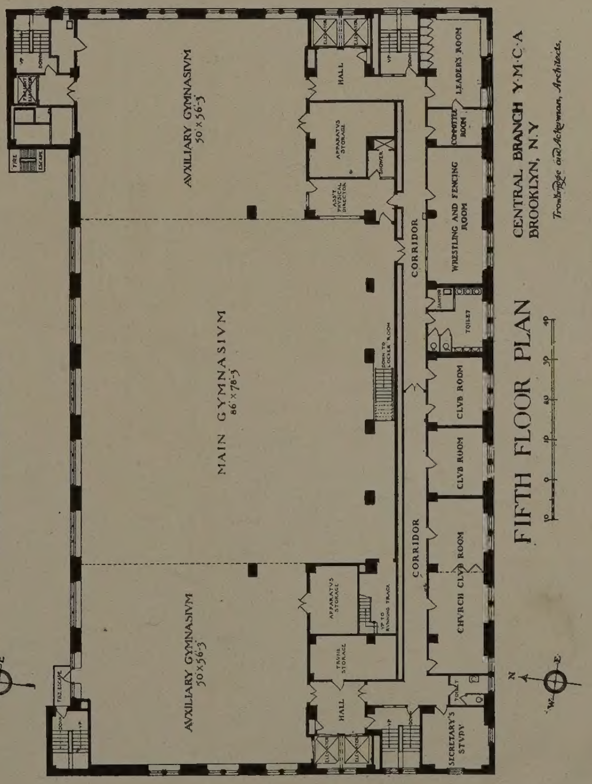
FOVRTH FLOOR PLAN

CENTRAL BRANCH Y·M·C·A
BROOKLYN, N·Y·

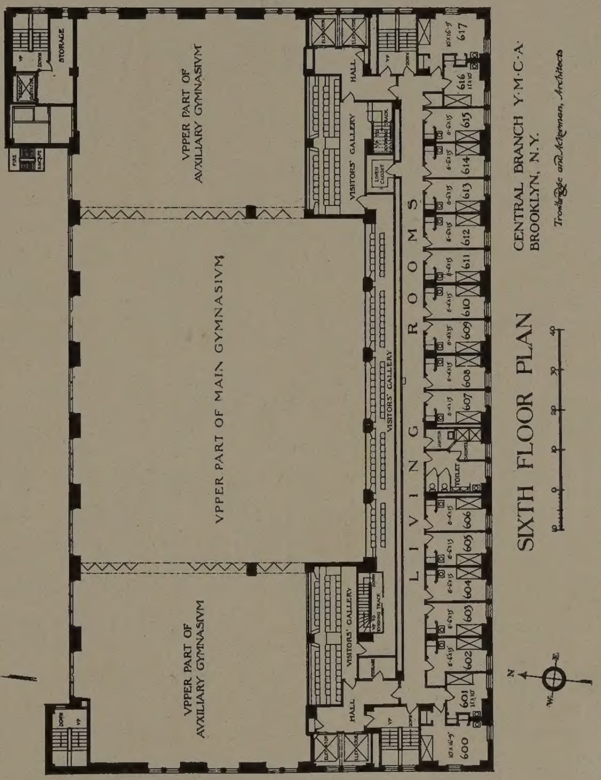
Trowbridge and Ackerman Architects



FIFTH FLOOR PLAN

CENTRAL BRANCH Y·M·C·A
BROOKLYN, N·Y

Trowbridge and Ackerman, Architects.



SIXTH FLOOR PLAN

CENTRAL BRANCH Y·M·C·A·
BROOKLYN, N.Y.

Trowbridge and Ackerman, Architects

PLANS, CENTRAL BRANCH BUILDING, Y. M. C. A., BROOKLYN, N. Y.

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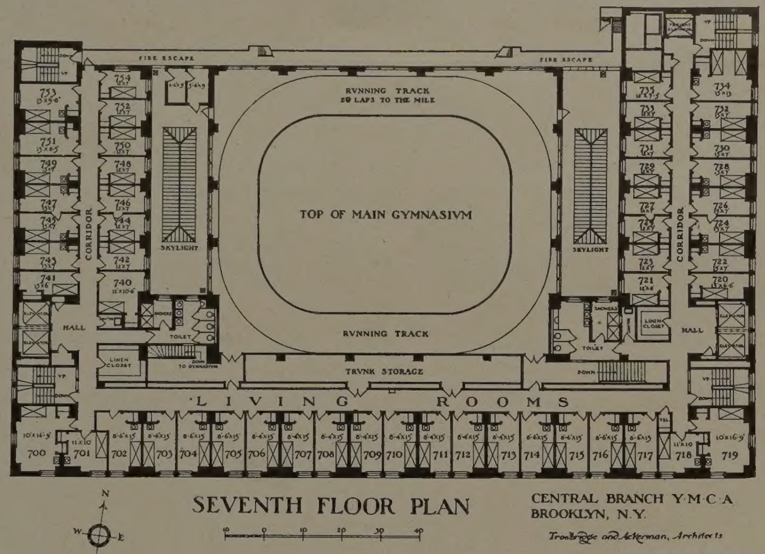
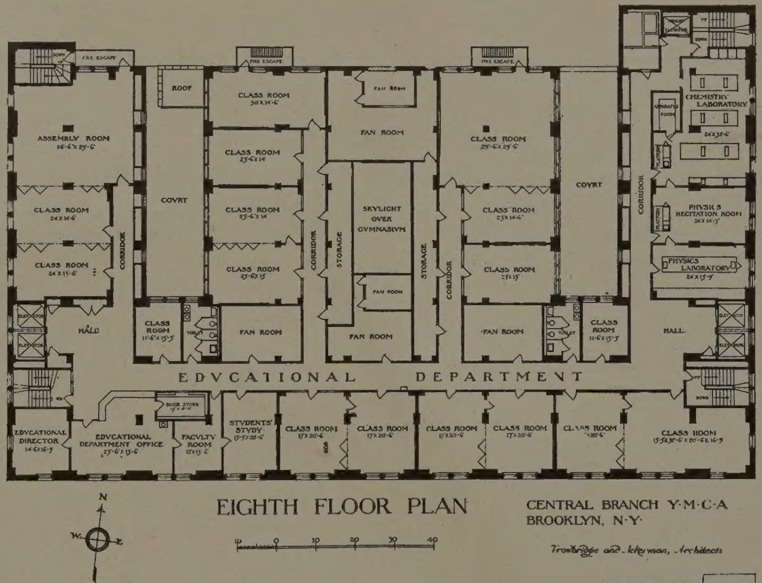


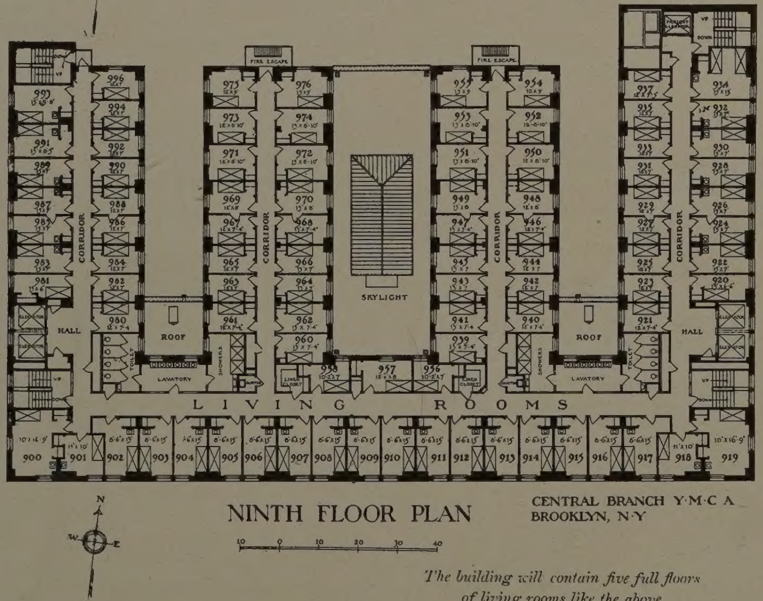
SEVENTH FLOOR PLAN

CENTRAL BRANCH Y·M·C·A
BROOKLYN, N.Y.
Trowbridge and Ackerman, Architects



EIGHTH FLOOR PLAN

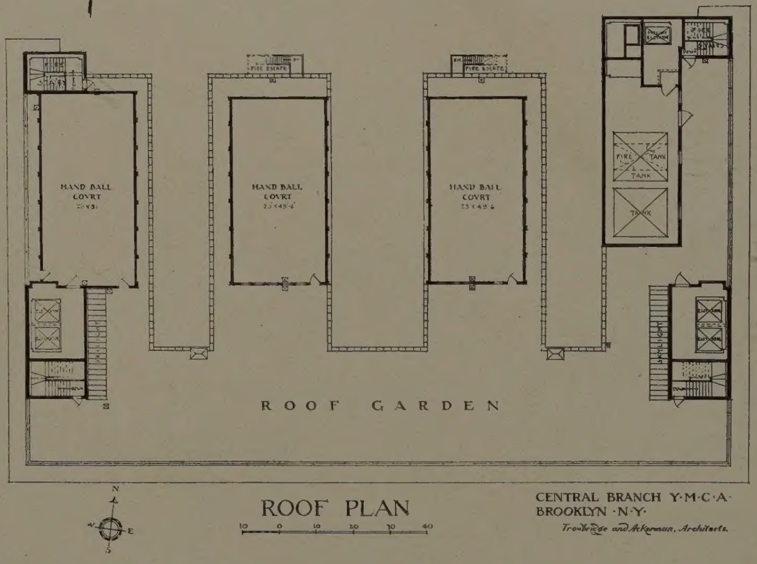
CENTRAL BRANCH Y·M·C·A
BROOKLYN, N·Y·
Trowbridge and Ackerman, Architects



NINTH FLOOR PLAN

CENTRAL BRANCH Y·M·C·A
BROOKLYN, N·Y

The building will contain five full floors of living rooms like the above



ROOF PLAN

CENTRAL BRANCH Y·M·C·A·
BROOKLYN ·N·Y·
Trowbridge and Ackerman, Architects.

PLANS, CENTRAL BRANCH BUILDING, Y. M. C. A., BROOKLYN, N. Y.

Trowbridge & Ackerman, Architects.

(Continued from page 5)

In the hand-book, under the heading of "Wooden Beams, tables of safe loads," will be found the allowable loads on beams one inch thick and from four to twenty-four inches deep. There are three sets of tables, the first for white pine, cedar, and spruce having an allowable fibre stress of 700 pounds per square inch, the second for short leaf yellow pine having an allowable fibre stress of 1,000 pounds per square inch, and the third for white oak and long-leaf yellow pine with an allowable fibre stress of 1,200 pounds per square inch.

The coefficient will vary according to whether the allowable fibre stress is 700, 1,000 or 1,200 pounds.

$M=3/2\ WL$ gives the tendency to bend caused by a load W. $M=S\ I/c$ gives the tendency of the beam to resist this bending. S can be taken as 1,200 pounds if we consider the wood to be long-leaf yellow pine. I/c—the section modulus—for rectangular beams is $1/6\ bd^2$. So $M=S\ I/c$ becomes $M=1{,}200\times 1/6\ bd^2$, and this equals $3/2\ WL$. By cancelling it will be found that $WL=2/3\times 200\times bd^2$ and this becomes $WL=133\ bd^2$. 133 is the coefficient of strength for long-leaf yellow pine.

In like manner it can be found that the coefficient for short-leaf yellow pine is 110, approximately, and for spruce it is 83. These are given in the New York Building Code, section 59, but are given larger values than the ones in this article. However, the engineer is "playing safe" by using those values given above.

One use of this coefficient is to check the tables of safe loads, exactly as in the case of steel beams. Given a 3-inch by 14-inch joist of long-leaf yellow pine, spanning 18 feet, what load will it carry safely? $W=133\ bd^2\div L$. $b=3$ inches, $d=14$ inches, and $L=18$ feet. Substituting in the formula: $W=133\times 3\times 14\times 14\div 18$. $W=4{,}350$.

In the table of safe loads for wooden beams, for allowable fibre stress of 1,200 pounds per square inch, will be found a load of 1,452 pounds which can be carried by a beam 1 inch thick and 14 inches deep, spanning 18 feet. A beam three times as thick as this will carry three times the load or $1{,}452\times 3=4{,}356$ pounds. This checks with the above result.

Another problem is: Given a load of 3,000 pounds, and a span of 16 feet, determine the size beam to carry it. $W=3{,}000$, $L=16$, and b and d are to be found. As there are two unknowns it is necessary to assume the value of one of them. The New York Building Code requires that all wooden joists shall be not less than three inches thick so b will be assumed to be 3 inches. The formula will be $3{,}000\times 16=133\times 3\times d^2$. $d^2=3{,}000\times 16\div 400$. $d^2=120$ and d will equal 11 inches. A beam 3 inches by 11 inches will do. This can be checked by referring to the table of safe loads.

So far the coefficients have been known as Coefficients of Strength. There is another set of coefficients which are known as Coefficients of Deflection.

The question of deflection of a beam some times assumes an important aspect when it is remembered that the New York Building Department will not allow a maximum deflection of a beam to be more than one three hundred and sixtieth of the span. In other words, a span of 20 feet or 240 inches divided by 360 will give the allowable deflection in inches—in this case two-thirds of an inch. The allowable deflection in inches can also be found by dividing the span in feet by thirty.

The formulas that are used to determine the deflection of a beam are usually complicated and the engineer who uses them finds that he is forced to use unfortunately large figures. Under the heading of "Explanation of the Tables of Properties of Standard I-beams," the formula that gives the deflection is found to be:

$$D=\frac{Wl^3}{76.8\ EI}$$

This formula is good only for a simple beam with a load uniformly distributed over the entire span, but this is the only condition that will be discussed in this article.

In this formula W is the load in pounds, l the length of the span in inches, E is known as the modulus of elasticity and for steel this is always 29,000,000, and I is the moment of inertia. The explanation of the modulus of elasticity—E—would only complicate matters but all that is really necessary to know is its numerical value—29,000,000.

It is quite possible to determine the deflection of a beam under any given load by means of the above formula but, as can be seen, this process involves no small amount of work. As the span can be reduced to feet, and as E is always constant, and I for any particular I-beam is known, a large percentage of this work can be done in advance for all cases. The formula will be simplified and this preliminary work will be represented by a coefficient.

For the purpose of establishing this coefficient W is assumed as 1,000 pounds, and the other values are substituted in the formula. For an 18-inch, 55-pound I-beam, with I equal to 795.6, it becomes:

$$D=\frac{1{,}000\ (L\times 12)^3}{76.8\times 29{,}000{,}000\times 795.6}$$

Reducing this to its simplest terms D is found to equal $.00000098\times L^3$. The decimal—.00000098—is the coefficient of deflection, and if it is multiplied by the length of the span in *feet*—L—cubed, and by the load in *thousands of pounds* it will give the actual deflection of an 18-inch, 55-pound I-beam supporting any load.

An example might serve to make this more clear. Suppose it is necessary to carry a load of 23,000 pounds over a span of 32 feet; it will be found that an 18-inch, 55-pound I-beam will be strong enough to do this, but it might deflect too much. It will be necessary to determine the deflection.

W, in thousands of pounds, is 23; L, in feet, is 32. D will equal $.00000098\times 32\times 32\times 32\times 23$, or 0.738. The allowable deflection will be $32\div 30=1.07$, so this beam will be safe.

It will be noticed that the above beam was not loaded to capacity. For a span of 32 feet the allowable load on an 18-inch, 55-pound I-beam will be 29,460 pounds. However, the coefficient gives the deflection for any load.

There is another coefficient of deflection that is determined by combining three formulas, $M=\frac{1}{8}Wl$, $M=S\ I/c$, and $D=Wl^3\div 76.8\ EI$. The tables giving this coefficient for spans of from 4 to 40 feet can be found in the Cambria hand-book on page 80 of the 1914 edition. This particular coefficient, however, can be used only when the beams are loaded to capacity, or when the fibres, most remote from the neutral axis, are stressed to 16,000 pounds per square inch.

This coefficient is the simplest of all to use. If it is necessary to know the deflection of a beam carrying a maximum safe load over a span of 16 feet, it is only necessary to divide the coefficient for this span—4,237—by the depth of the beam. In case the beam is a 12-inch I-beam, the deflection will be $4.237\div 12=0.353$.

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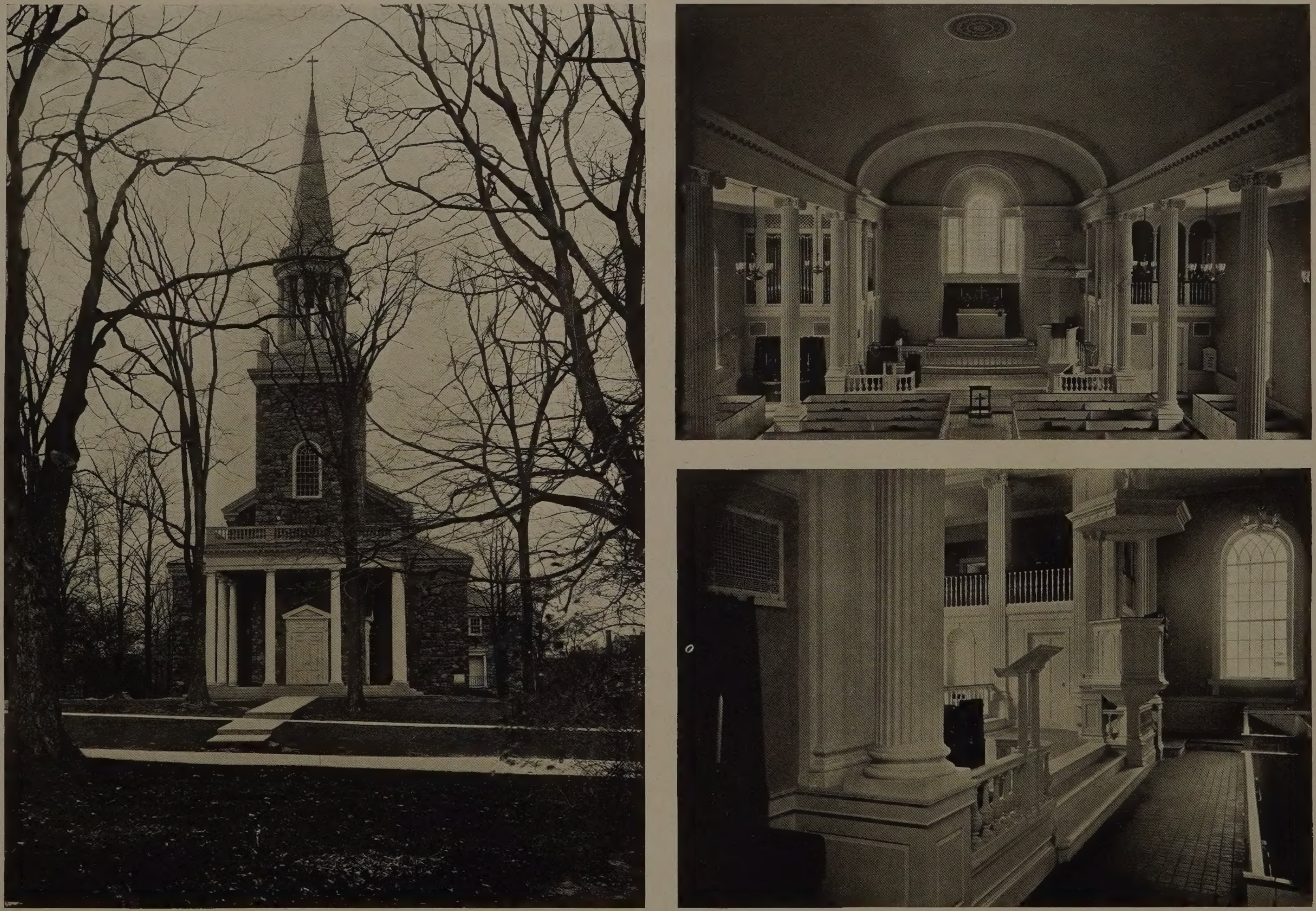

ST. STEPHEN'S EPISCOPAL CHURCH, RIDGEFIELD, CONN.

W. K. Rainsford, Architect. Allen & Collens, Assoc. Architects.

(Continued from page 9)

This result can be checked by means of the first coefficient. Suppose a 12-inch, 35-pound I-beam is to carry a safe load of 25,360 pounds over a span of 16 feet. By means of the coefficient of deflection found in the table of prperties the deflection will be found in the following manner: $.0000034\times25.36\times16\times16\times16=0.353$. This checks with the deflection found above.

Another example may make the method clearer. Suppose a 15-inch, 40-pound channel is to carry a maximum safe load of 24,710 pounds over a span of 20 feet. The coefficient of deflection is .0000022 and the deflection is $.0000022\times24.71\times20\times20\times20=0.44$.

The coefficient on page 80 for a 20-foot span is 6.621 and to check the above result it is necessary to divide this by 15. $6.621\div15=0.44$. This result checks with the one given by the other coefficient.

In the table of safe loads on beams will be found heavy lines drawn across the pages. All loads above these lines will not cause a deflection of more than one three hundred and sixtieth of the span. All loads below these lines, while perfectly safe and can be carried by the beams, will cause too much deflection.

This may be checked in the following manner: A 12-inch, 31½-pound I-beam spanning 27 feet can safely carry a load of 14,210 pounds. But it will be seen that this value falls below the heavy line. The actual deflection of the beam under this load will be $12.066\div12=1.00$ inch, as given by the coefficient on page 80. The allowable deflection will be $27\div30=.90$, and as this is less than 1.00 the actual deflection will be too great.

One who becomes thoroughly familiar with the coefficients finds them of service on many occasions, but at first it may seem as if there are so many ways of obtaining the same results that the use of the coefficients is hardly necessary.

Legal Decisions of Interest to the Architect

These decisions appear monthly and are edited by Mr. John Simpson, the well-known lawyer.

ENCROACHMENTS—REMEDY OF INJURED ADJOINING OWNER.

THE owner of a store building abutting on a street knew that a bank proposed to erect an adjacent building, the front of which when completed, would encroach upon the street; but he made no complaint until after the building was erected. To remove the encroachment would cost at least $15,000, and the bank building would not then answer the purpose for which it was designed. The depreciation to the plaintiff's building in consequence of the encroachment caused by a pillar obstructing the view of a show window, could be ascertained and compensated. In an action against the bank the trial court awarded damages and required the defendant to remove the front of the bank building from the street. On appeal the Utah Supreme Court held that under the circumstances the Court would not compel the removal of the encroachment as a public nuisance causing special injury to the plaintiff, but would limit him to a recovery of damages. He could in one action recover all the damages sustained, past and prospective; and if the encroachment lessened the rental value of the property, he could recover the full depreciation of the value, such a sum as, if invested at the legal rate of interest, would produce the amount of the lessened rental value. The defendant might elect to remove the encroachment, instead of paying the damages caused by the nuisance, and the election might be made at any time before trial of an action to remove the encroachment and for damages; and if the encroachment was removed, the damages recoverable would be the amount of the depreciation of the value of the use of the property up to the time of actual removal. But the unauthorized extension of a part of a building, such as a cornice, over the building of the adjacent owner is a trespass, and the owner making the extension must, at the suit of the adjacent owner, remove the encroachment; he cannot limit the latter to a recovery of damages.—Lewis *v.* Pingree Nat. Bank (Utah) 151 Pac. 558.

LIABILITY FOR MARBLE PURCHASED.

In an action for the balance due on a contract for marble, the contract showed that the buyer, the owner of the building into which it was to be set, did not become the owner of the marble until it was incorporated in the building, and was at most a custodian of any surplus marble, and not liable for it unless he appropriated it for his own use, or failed to comply with the direction of the seller as to its disposition. It was held that a charge to the jury that the title to the marble shipped passed to the buyer when placed aboard cars f. o. b., and that the marble so shipped became the property of the buyer, subject to his right to return to the seller any surplus over that required for the building, was misleading, as inducing the jury to hold the buyer liable for all the marble that was shipped.—Fleming *v.* Law, (Cal.) 151 Pac. 385.

TIME OF COMPLETION.

In the absence of a provision in a building contract as to the time within which a building is to be completed, the completion must be within a reasonable time, and what is a reasonable time depends upon the circumstances under which the work of construction is prosecuted. In an action to recover a sum of money paid on the purchase price of a five-room dwelling house to be erected by the defendant, on the ground that its construction had not been completed within a reasonable time, evidence that it was completed within seven days of the time set by the plaintiff therefor does not show an unreasonable delay. Ordinarily a provision in a building contract, specifying a definite time within which a structure should be completed, is to be construed as meaning that the time specified has reference to the building proper, and that it shall on the expiration of such time be ready for occupancy, and does not include the sidewalk in front of the building.—Giberson *v.* Fink, (Cal.) 151 Pac. 371.

UNAUTHORIZED ALTERATIONS DISCHARGING SURETIES.

Action was brought on a surety's bond, in which the defense was that the surety was discharged by alterations on the contract. The contract provided that the superintendent might make alterations; but it was a condition of the surety bond that the contractor should well and truly perform the contract and any alterations and additions to

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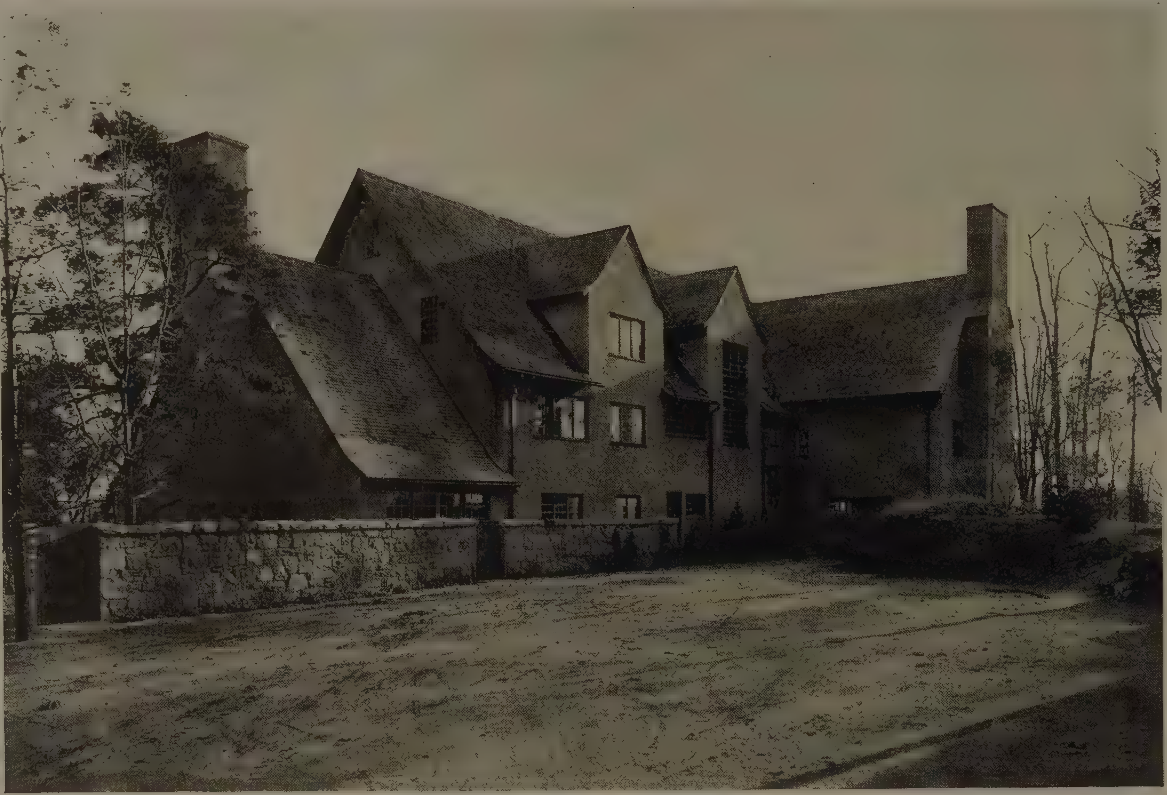

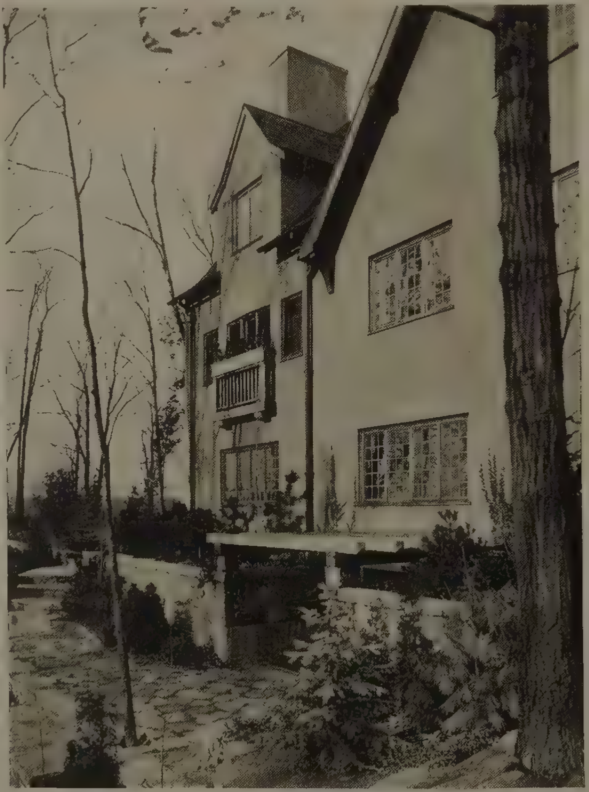

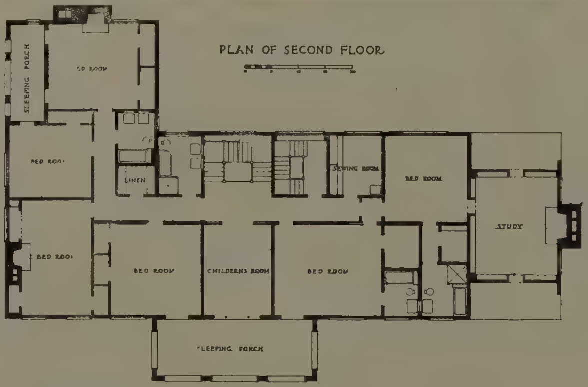

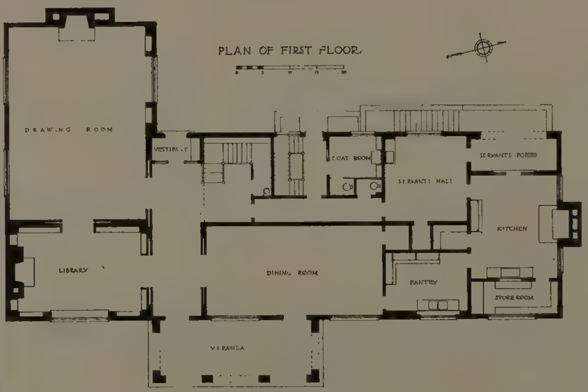

HOUSE AND PLANS, ROBERT WALKER, SCARSDALE, N. Y. James Brite, Architect.

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it, providing they did not exceed $8 in extra costs. It was held that the extent of alterations on the contract which might be made by the parties thereto, without the consent of the sureties, was limited by the condition of the bond. There was no alteration of the contract, as regards discharge of the sureties on the bond, where, by a new and independent contract, the parties contracted for a fire wall outside the building covered by the original contract. Nor was there a variation of the contract, operating to discharge the sureties, but merely a breach thereof by the contractor, where he, without request of an agreement with the owner, installed ceilings of material other than called for by the contract. But material changes in the work specified in the contract costing far in excess of the sum authorized in the bond, without the consent of the sureties, were held to discharge them.—Neuwirth *v.* Moydell (Mo.) 174 S. W. 206.

Building Restrictions—"Front of Lot"—"Side of Lot."

Action was brought to enjoin the owners of a lot in what is known as Sheridan Drive subdivision of the city of Chicago from constructing a store building on a lot in violation of certain conditions in the deeds by which the lots in the subdivision were sold and conveyed. The defendants denied that the contemplated building would constitute a violation of the building restrictions, and alleged that, because of changed conditions and acquiescence on the part of the lot owners in repeated violations of such restrictions, they were no longer valid and enforceable as building restrictions.

On the plat of the subdivision all the lots faced on the streets running north and south, with an alley running north and south behind each lot. The plat also showed a building line running north and south across the lots 30 feet back from the street line. Each deed provided that no building should be erected or placed on that portion of any lot between the building line crossing said lot where shown on the plat and the front of such lot, and that every corner lot was sold on condition that no building should be erected on the front three-fifths of such lot, facing on the side street. After the subdivision was platted one of the east and west streets had become a principal business street. The building (which the defendants had completed while the suit was pending) was a one story brick building with seven separate apartments or stores, erected on the defendants' lot at the intersection of such business street with a north and south street. It faced north and extended to the building line 30 feet from the north and south street. The Illinois Supreme Court holds that, under the restriction, when construed in the light of surrounding circumstances, the east and west streets were side streets, regardless of their use; since the front of the lot is that portion of the lot opposite the rear of the lot and facing on the street, and the side, is that portion adjacent to the lot or lots on either side of it. No building line restrictions of any kind were indicated upon that portion of any of the lots adjacent to and extending along the east and west streets.

Waiver of Right to Enforce Restrictions.

It was contended that the covenants contained in the deed had been abandoned because no general plan of improvement has been adopted and uniformly adhered to and carried out with respect to buildings upon the lots in the subdivisions; that there were different restrictions in various deeds, and that in many instances the building line restrictions had been violated without any protest; and because of these facts and the change of conditions in the subdivision the plaintiffs were estopped from enjoining the contemplated improvement. Much evidence as to this was introduced, from which it appeared that in some instances bay windows, porches and railings had been extended over the building line, and that flat buildings had been constructed on some of the corner lots having entrances on the side streets as well as the front streets, although all of those buildings are apparently so designed and constructed that their fronts and main entrances are upon the north and south streets. In one or two instances the grantor of the deeds had attempted to release the grantees of corner lots from the restriction against erecting buildings on the front three-fifths of the corner lots facing the side streets, and there was no uniformity in the language of the restrictions, the deeds executed subsequent to 1900 requiring the grantees, their heirs and assigns, to covenant for the benefit of the owners, from time to time, of the other lots in the subdivision, that they would observe the building restrictions, and not sell soil and sand, nor build houses on the lots of less value than $3,500 within seven years, etc. It was, however, held that the master's finding that the restriction had not been abandoned or waived by a consent to other violations was not contrary to the greater weight of the evidence.

Change in Conditions of Neighborhood.

The Court said that, while it undoubtedly might be a hardship on the defendants to enforce a strict compliance with the restriction, and thereby prevent them from devoting their property to a use which, by reason of the subsequent development of the subdivision and change in conditions and travel, is apparently advantageous to them, that fact alone did not warrant the Court in relieving them from the obligations of the bargain which they had voluntarily made. They knew, when they purchased the lot, of this restriction in the deed, and the manner in which the lot might be used and the restrictions to which it was subject. These matters were all undoubtedly taken into consideration by the parties in fixing the price of the lot at the time it was sold, and, if this restriction was a damage to the lot, the plaintiffs received full advantage of it at the time they purchased the lot. At any rate, they purchased the lot subject to these conditions, and were now bound by them so long as the restrictions were reasonable, and not contrary to public policy.

In completing the building while the suit was pending the plaintiffs acted at their peril, and, after a finding that the building did violate the restriction, might be compelled by mandatory injunction to remove it or alter it to conform with the restriction.—Turney *v.* Shriver, Illinois Supreme Court, 109 N. E. 708.

Latent Defects Discovered After Settlement.

In an action against a building contractor for failure to perform the contract in a good and workmanlike manner and according to the contract, the defendants answer alleged that the plaintiff or her agents were present while the work on the building was in progress, that when it was completed it was accepted, and that a settlement was had. The plaintiff's reply alleged that she did not know of the defective material and workmanship alleged at the time of

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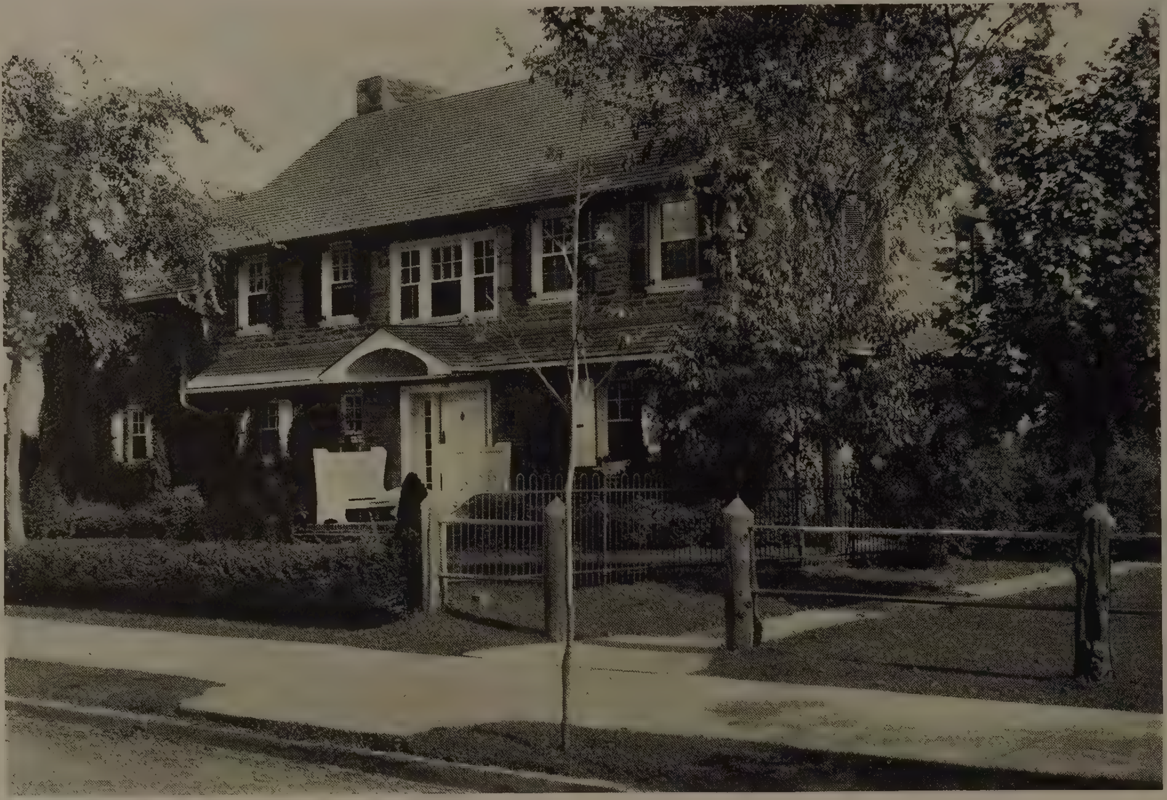

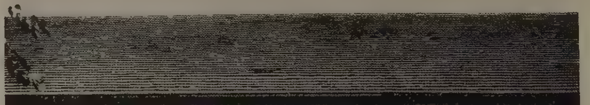

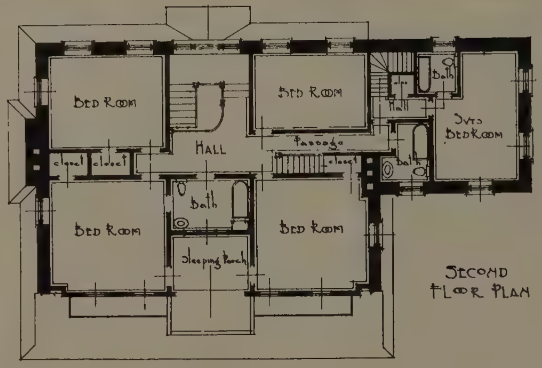

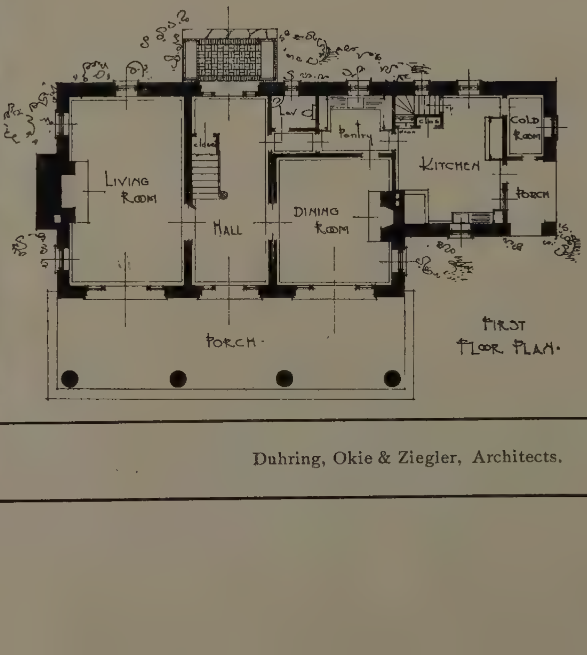

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Duhring, Okie & Ziegler, Architects.

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the settlement, and could not have discovered it, as it was not open to observation, and that she did not know thereof until after the settlement. It was held that this reply showed that the defects complained of were latent, and was sufficient.—Young *v.* Olden, Indiana Supreme Court, 109 N. E. 909.

BONDING COMPANIES—FAILURE TO GIVE NOTICE OF CONTRACTOR'S DEFAULT.

The Kansas Supreme Court holds to the doctrine that a bonding company engaged in the business of insuring the performance of contracts of others for pay is not a "favorite of the law" in the sense in which the term is applied to accommodation sureties. Although calling themselves sureties, it holds that such corporations are in fact insurers, and in determining their rights and liabilities the rules applicable to suretyship do not apply. It was held that a company which is a surety on a building contractor's bond is not released because of the owner's failure to give notice, according to the terms of the bond, of the failure of the builder to complete the building within the time specified, where such failure resulted in no actual loss or prejudice to the bonding company, notwithstanding the bond provides that no liability shall attach to the company unless such notice be given a certain time after the default.—School District *v.* Massachusetts Bonding Co. (Kan.) 142 Pac. 1077.

FAILURE TO SUBSTANTIALLY COMPLY WITH CONTRACT—RECOVERY ON QUANTUM MERUIT—ACCEPTANCE.

The North Dakota Supreme Court, where the question recently came up for the first time, adheres to the general rule that, where a contractor has constructed a building under a special contract, but has failed to substantially comply with its terms, he will be permitted to recover on the *quantum meruit* for the reasonable value to the owner, not exceeding the contract price, of his labor and materials of which such owner has received and is receiving a benefit, provided the contractor did not intentionally or in bad faith neglect or omit to fulfill such contract. "In a few States," the Court added, "notably Wisconsin and California (Manning *v.* School District, 124 Wis. 84, 102 N. W. 356; Zoltman *v.* San Francisco, 20, Cal. 96, 81 Am. Dec. 96), a recovery cannot be had on the *quantum meruit,* even though the contractor has in good faith partly performed his contract resulting in some enrichment of his proprietor, without proof of acceptance other than such as may be inferred from the mere fact that the improvement is retained and used" "by doing that which is unavoidable," in the language of the Wisconsin case cited, or "where there is no power or freedom of election" according to the California case). "Judge Marshall of the Wisconsin Court, while following the earlier precedents in his State, admits that there are many respectable authorities in other jurisdictions to the contrary."—Horton *v* Emerson, North Dakota Supreme Court, 152 N. W. 529.

CONTRACT TO PREPARE PLANS—EFFECT OF FAILURE TO PERFORM.

An Architect, employed to prepare plans and specifications to be approved by the owner and a city inspector of buildings for remodeling a building, which was to be made new with the exception of the outside walls, prepared plans and specifications showing that the basement walls were 26 inches thick. He subsequently learned from the owner that they were in fact only 18 inches thick and corrected the plans, but never submitted the corrected and changed plans, or any plans showing an 18-inch wall, to the owner for approval. It was held, by the Circuit Court of Appeals, Sixth Circuit, that he failed to comply with a most important provision of the contract, and could not recover the contract price for his services.—Mayer *v.* Wells, C. C. A., 222 Fed. 881.

SURETY'S CLAIM OF RELEASE.

The specifications of a building contract provided that payments would be made weekly in the proportion of work to total labor and materials furnished and worked into buildings, less 25 per cent. of estimates, at option of owner, and that the Architect should estimate the work done and material furnished and issue his certificate for 75 per cent. of the cost. In an action against the contractor and the surety on his bond to recover damages for breach of contract, the defendants claimed a substantial change in the building and a payment to the contractor in violation of the terms of the contract. It was found by the trial court that there were no substantial changes in the building, and that the provision as to payment meant that estimates should be made of all work done in the building and material furnished by the contractor on the premises, and that the provision in the specifications as to payment constituted no part of the specifications as to the building, but had been put in merely for the information of bidders. Judgment for the plaintiff was affirmed.—Title Guaranty & Surety Co. *v.* Barnwell, Texas Civil Appeals 178 S. W. 694.

ARCHITECT'S DECISION.—CONCLUSIVENESS.

In an action for the balance of a contract price, under a building contract that provided that the Architect's decision as to the meaning of the drawings and specifications should be final, the Trial Court ruled that the decision of the Architect was not fair, nor made upon reasonable grounds. On appeal, it was held that this was far from finding that the Architect decided in fraud or bad faith, and the universal rule is that under such a provision the Architect's decision is final and binding on the parties unless resulting from fraud or bad faith. Indeed, the Trial Court negatived fraud; for he found that the Architect "was in no position to make a fair and reasonable award, and did not do so, although he honestly tried within his limitations." This the Connecticut Supreme Court held to be the equivalent of a finding that the Architect acted in good faith.

The Trial Court also improperly held that the decision of the Architect was not made on reasonable grounds, because through his neglect and inefficiency, delay and expense in the construction of the building were entailed. The mere incompetency or neglect of the Architect will not avoid the effect of a decision by him, unless his negligence be so gross as to amount to fraud or bad faith.—George S. Chatfield Co. *v.* O'Neill (Conn.), 93 Atl. 133.

WAIVER OF NECESSITY FOR FINAL CERTIFICATE.

A contract for the structural iron work of a building called for a certificate of acceptance by the Architect. The owner, in response to a demand for final payment, stated that he would be glad to pay the balance were it not that other contractors had brought an action against him in which they made the iron work contractor also a defendant. The Architect wrote a letter stating that the work was satisfactory, but that the acceptance was not to be construed as to

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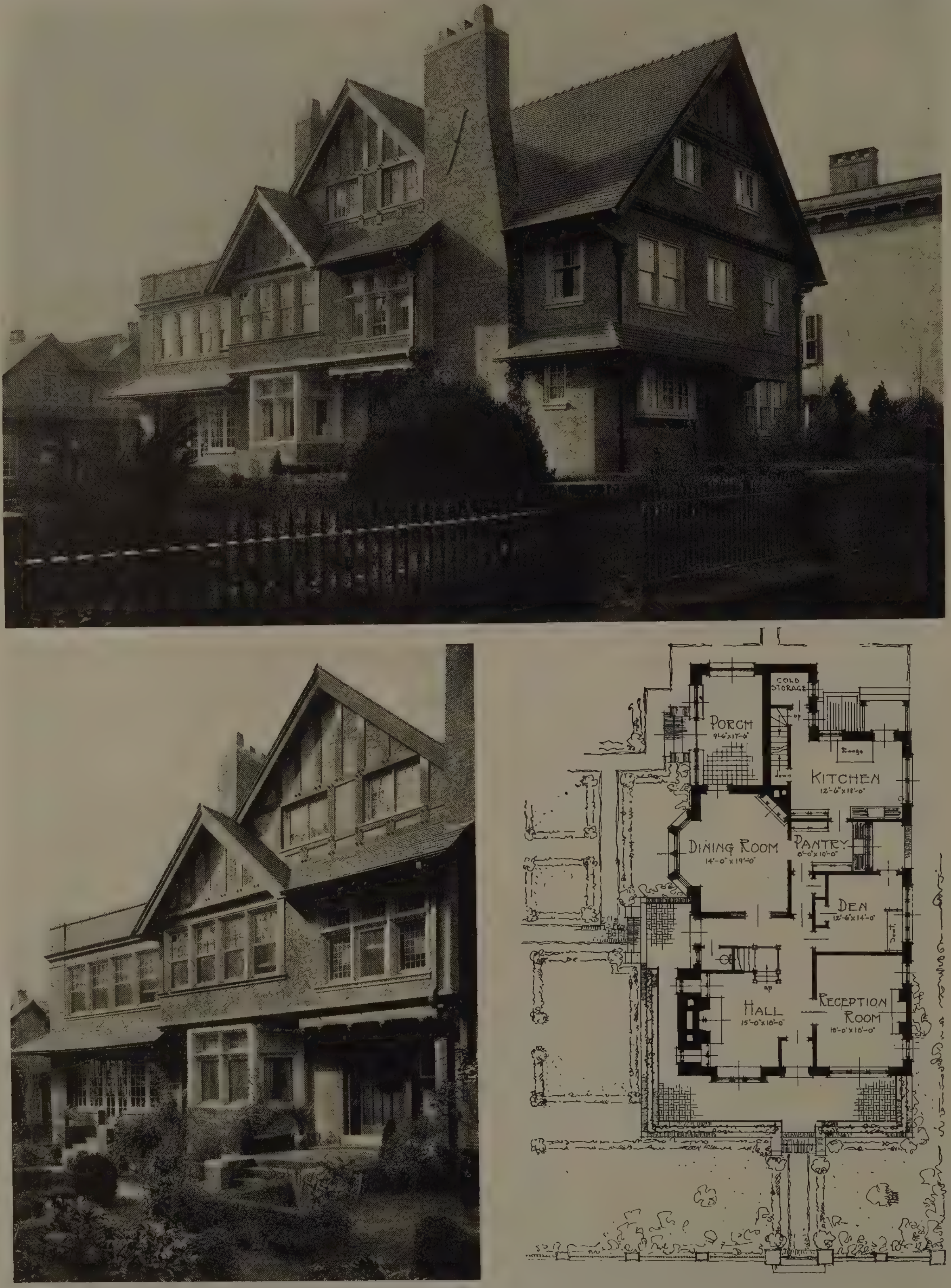

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Duhring, Okie & Ziegler, Architects.

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the time limit within which it was to be done. Under the contract it was the duty of the Architect to certify to the character and quality of the erection work done by the iron work contractor, but it was not his duty to act as arbitrator in the settlement of damages arising out of the failure of the contractor to complete its work within the time specified in the contract. The contractor was led astray by the owner's declarations. In a proceeding to enforce mechanic's liens against the property, the Illinois Supreme Court held that the necessity of a final certificate was waived.—Walsh *v*. North American Cold Storage Co., 260 Ill. 322, 103 N. E. 185.

DEFECT IN BUILDING.—OWNER ENTITLED TO COST OF REPAIR.

The Kansas Supreme Court holds that a mere defect in a building which can be remedied by repair entitles the owner to the cost of such repair, and he is not confined to a recovery from the contractor of the difference between the value of the building as constructed and its value as contracted for.—Thomas V. Warrenburg, (Kan.) 141 Pac. 255.

PERFORMANCE TO THE "SATISFACTION OF THE OWNER."

A building contract provided that the work was to be done to the satisfaction of the owner. It also bound the contractor to furnish the materials and do the work in accordance with plans and specifications prepared by the owner's Architect and under the Architect's direction. The Illinois Supreme Court holds that this was not a simple agreement to construct a building that would be satisfactory to the owner. If it was in good faith constructed of material and in the manner specified in the plans and specifications prepared by the Architect, the owner could not refuse payment merely because he was dissatisfied. And a capricious or unreasonable refusal of the Architect to approve the work or material would not defeat payment.—Erikson *v*. Ward, 266 Ill. 259, 107 N. E. 593.

EXTENSION OF TIME FOR COMPLETION.—CLAIM BY CONTRACTOR.

A building contract provided that if the contractor was delayed in the prosecution or completion of the work by the act or neglect of the owner or Architect, or by any casualty for which the contractor was not responsible, the time for completion should be extended accordingly, but that no such allowance should be made unless a claim was presented in writing to the Architect within 48 hours of the occurrence of the delay. In an action for breach of the contract it was held that a delay in commencing work due to the act of third parties in placing macadam on the lots was such a delay as required the contractor to make claim in writing as a basis for an extension.—Hiller *v*. Daman (Mo.) 166 S. W. 869.

NECESSITY FOR ARCHITECT'S CERTIFICATE—MEASURE OF DAMAGES FOR NON-PERFORMANCE.

A building contractor began to build a house under a written contract, but quit the work, brought an action on a *quantum meruit* and recovered a verdict for his full claim. He contended that the defendant broke the contract by failure in a partial payment under the contract. The contract provided for such payments on certificates of the Architects. When the plaintiff closed his case the Court expressed the opinion that the plaintiff could not recover because of performance or of refusal of the Architect's certificate, as it seemed clear that the plaintiff had not performed the work to the point of entitling him to the certificate. The jury, however, found for the plaintiff.

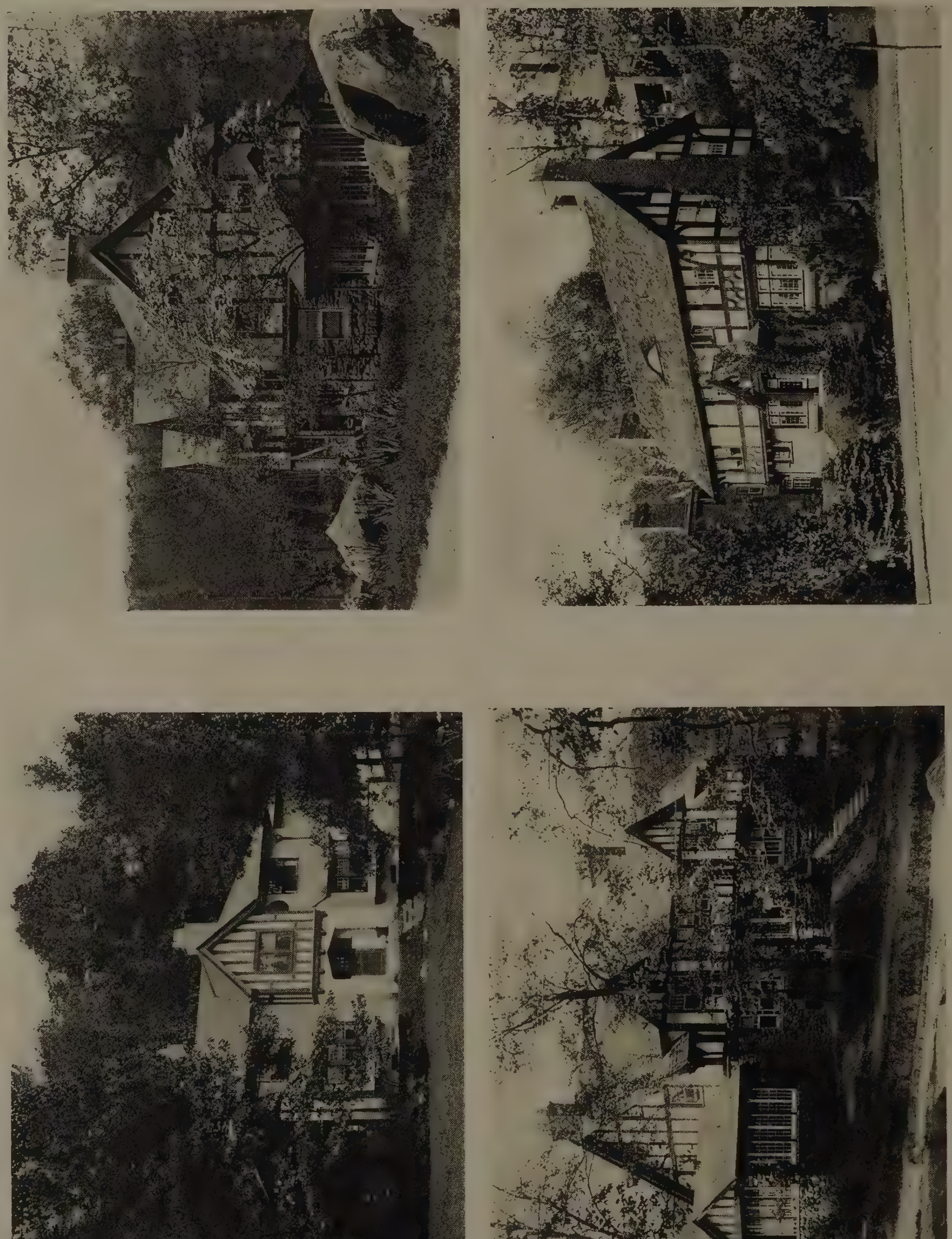
On appeal, the New York Appellate Division said that the general rule is that, if the performance had been stopped by the fault of the owner, the contractor could elect to rescind and to sue on a *quantum meruit* for the value of his work, or to sue upon the contract to recover for the work done according to the contract and for the loss, in profits or otherwise, sustained. As the plaintiff sued on a *quantum meruit,* he was bound to establish that performance had been stopped by the defendant. The act of the defendant relied upon by the plaintiff was the failure to pay an installment when due under the contract. The certificate of the Architect by the terms of the contract was made a condition precedent to that payment. The certificate was applied for and refused. The Court held that the evidence did not establish that the plaintiff was entitled to it. The facts lent credence to the testimony of the Architect that he refused the certificate for the non-performance of the plaintiff, and that he so informed the plaintiff. The plaintiff claimed that the defendant directed the Architect not to issue the certificate until the defendant's superintendent of construction recommended it, and that the Architect informed the plaintiff of this, whereupon the plaintiff stopped work. It was held that if the plaintiff was not entitled to the certificate, he was not entitled to the payment under the contract, and consequently the defendant did not legally stop performance by her omission or refusal to make the first payment in the absence of the certificate. And her right to withhold the payment was not affected if the Architect based his refusal to issue the certificate upon a ground additional to non-performance, and that additional ground was not authorized by the contract. The defendant was held liable to the plaintiff for the contract price less the amount required for its completion, which she conceded to be due. Borup *v* von Kokeritz, 162 N. Y. App. Div. 394.

WITHHOLDING ARCHITECT'S CERTIFICATE AS EVIDENCE OF NONACCEPTANCE OF STRUCTURE.

Where an Architect refuses to issue a certificate to a contractor showing that the latter is entitled to be paid, no substantial reason existing for such refusal, the contractor may recover the amount agreed to be paid, notwithstanding that the contract specifically provides that payment shall be made only upon the production of the certificate of the Architect. But the fact that the Architect's certificate is withheld, taken in connection with the fact that a contention is made by the owner that there has been a failure to complete the structure, is very persuasive evidence negativing the claim that an unreserved acceptance of the work has been made by the entering into possession thereof and making use of the same. Machinery & Electrical Co. *v*. Y. M. C. A., (Cal.) 134 Pac. 724.

RIGHT TO MAKE ALTERATIONS.

A stipulation in a building contract that the owner may make alterations, additions omissions, or substitutions in the plans, materials, or workmanship, without invalidating the contract, is held to be a covenant to which the contractor's surety is bound, and, in the absence of any express provision that the surety shall be consulted before making any alterations, the surety is not discharged because of alterations, in the absence of any evidence that its liability was increased.



THE ARCHITECT'S SCRAP BOOK—HOUSES IN BRONXVILLE, N. Y.

ARCHITECTVRE

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PLATES AND ILLUSTRATIONS

ARCHITECTURE SERIES OF MEASURED DETAILS.
Doorway, House at Valley Forge, Pa. - Double Plate I
Drawn by Walter McQuade.
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Measured and drawn by Benj. F. Betts.
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Editorial

War Towns—Creation to Order

THE kind of war town of which we are speaking is that which war has created and not that which war has destroyed. There have been built in this country in the past year more small towns, practically complete in themselves, than have been erected in a similar length of time in all the world beside, and it is deplorable to think of the quality of design which goes into this work. We read the other day how the town at Hopewell was utterly destroyed by a fire which lasted only for a couple of hours; photographs of the town published in some of the papers the day after the fire, have tempered our regret for this unhappy circumstance. The companies who have been so busily and rapidly engaged in the construction of the villages for their employees have not in most cases exercised any care at all to see that the dwellings were comfortable, durable or sanitary, and the cases in which they have paid any attention to the construction of an artistic and attractive community have been very few. It is pathetic to think of the wasted opportunities and there is no doubt that the Architects themselves are somewhat at fault for this condition of affairs.

It is notorious that houses constructed from the designs and under the supervision of Architects of reputation, cost more than those designed and built by the contractors themselves, and while this fact is in part due to the superior quality of materials and workmanship which an Architect demands, it is likewise due to the lack of knowledge on the part of many Architects of economical methods of construction. It is useless to berate the companies for not being willing to spend more money to secure sightly homes for their workers; the thing that the Architects ought to

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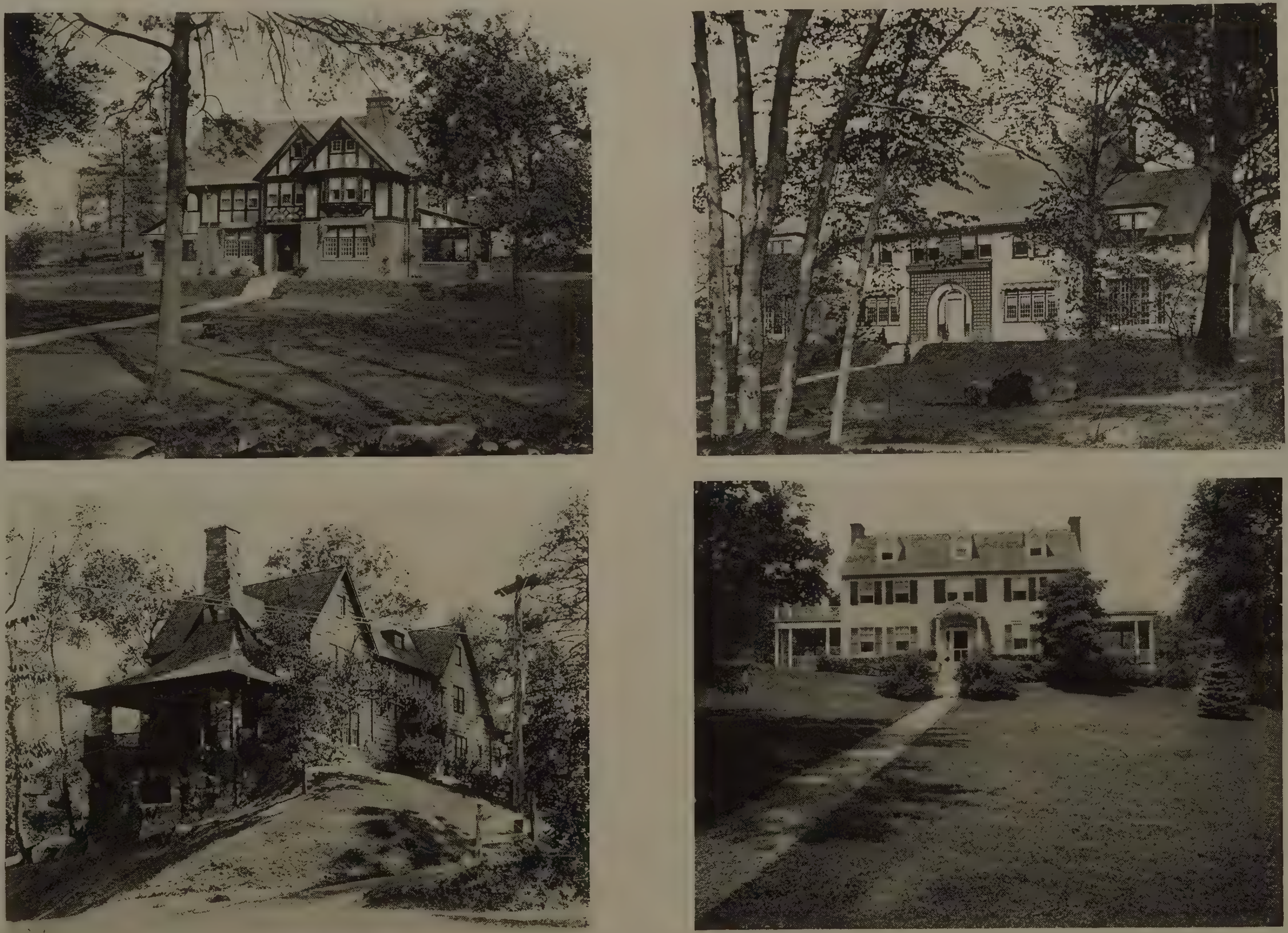

THE ARCHITECT'S SCRAP BOOK—HOUSES IN BRONXVILLE, N. Y.

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do is to produce an equal amount of house of far better comfort and appearance for the same money that a contractor-built house would cost, and this they cannot as a rule perform. The function of an Architect is as much to produce the best that can be had for the money as it is to design beautiful structures. There is no question that the design and construction of the small house along lines of taste and quality is more important to the great mass of our citizens than is the design of some tremendous monument of enduring materials. Now while the profession is to blame for the bad opinion which the public has formed of the Architect's ability to build economically, we cannot believe that the companies should be absolved from responsibility in this matter. If it be true that many of the Architects habitually design work in such manner that an increased expenditure over the normal amount is necessary to produce an attractive appearance, there are also very many men who are capable of designing attractive houses at as low a cost as the unattractive ones which are now being constructed, and it seems to us that the companies that have these large developments in hand ought to seek out their Architects with the same care that they exercise in the selection of any other experts.

To quote one case: the Remington Arms Company recently built at Bridgeport a great number of workmens' homes and apartment houses. They began by employing an Architect, they failed to get along with him, discharged him and built another group of buildings without the services of any Architect whatsoever, and certain officials of the company have expressed themselves as being distinctly averse to the employment of an Architect for any similar work, should another opportunity arise. Now there is no sense in such an attitude on the part of the officials of this company. Our information is not sufficient to permit us to form any judgment as to whether the company or the Architect is at fault, nor is the question one which is very important. The company should have ascertained in advance whether the man they employed was a capable designer and of a type in which they could place confidence, and having thus selected the man he should have been permitted to work out their ideas for them. The work that the company has done in Bridgeport has apparently little to recommend it beside its low cost; had the company devoted to this large investment a sufficient amount of time and thought, they could have had in Bridgeport a model village as attractive as Port Sunlight in England, as valuable an investment as is that town, and as wonderful a piece of advertising as that has been.

THERE probably was never a novel written, having for one of the characters an artist, a poet, a writer or an Architect, in which the words "creation," "inspiration," and "mood" were not very frequently used. One reads about the painter fumbling over his canvas for days, or sitting humbly in his attic waiting for the "great idea" to come to him. He then dashes it off with inspired hands, the color scheme inevitably correct and the brushwork rapid and facile. Artists of all sorts, according to the novelists and in the popular mind as well, are sternly dominated by the artistic temperament, and can work only when they have a great idea, and can work at their expression of the great idea only when the mood is upon them, generally after eleven o'clock at night. Nor do they work for money; they work to leave a legacy to the future. Of course fame sometimes comes to them late in life, or preferably when they are upon their death beds, but its arrival generally is postponed until they have long been dead, and is really of no particular use to them.

This is truly the popular (and novelistic) conception of the artist, using the word artist in its broad sense to include all the people who "create," who sell tangible expressions of thoughts; and I wonder how such an impression got abroad. In the first place the average artist does not think he has a mission: he knows that he was born with an ability to do certain things which by training he has developed so that they have become commercially valuable. His inherent ability is not more remarkable than that of the expert accountant, or the natural born salesman, and there is not now living, nor ever was, an artist who was not "made" as well as born. The artist does not wait for an inspiration, he waits for an order, and when he gets it he has "creation" and "inspiration" and "mood" enough to satisfy any Robert W. Chambers of the lot. Mr. Chambers, by the way, ought to, and probably does know, better than to hand out the sort of stuff that he writes about inspiration and creation, for he is himself a hard working painter and writing man, and he knows as well as any of us that work does not wait for an inspiration.

The curious thing about all this working to order that artists do, is that it occasionally results in masterpieces, and that the man who does not work to please the crowd, and does work to please only himself (according to the accepted views of correctness as laid down by the novelist), seldom or never produces anything of either temporary or permanent importance. I suppose that the best illustration which can be chosen from the literary world is of the late lamented William Shakespeare, who was, if his biographies are to be believed, a prosaic, canny, hard working, hard drinking theatrical manager, who had to write his plays because he could not find anybody else to do it for him. There certainly is very little in Shakespeare's work which suggests waiting for an idea; he borrowed or stole, if you like the expression better, the plots of his plays wherever he found them convenient; he was not above lifting the dialogue with the idea, and wrote his plays of a convenient acting length, and handled his matter in a way suited to please the crowds of his time, and to make money for him. Yet it is probably true that Shakespeare is the greatest writer of English who has ever lived, and his reputation rests not upon the lyrical pieces that he "dashed off" to amuse himself, but upon the great bulk of his plays, which he wrote to please the popular taste.

To take an illustration from another field; Michael Angelo was a craftsman of not dissimilar sort; trained as a sculptor he became a painter to order, and in both fields his greatest successes were upon works which he made to order, as the sculpture upon the Medici Tomb, and the frescoed ceiling of the Sistine Chapel. It is possible that Michael Angelo did a certain amount of work just because he wanted to, but it is certain that the work by which we know him was done to order.

In architecture there is no question about men's reputations depending upon the things which they have created to order. There have been cases where men have thought of a scheme for a monument or for a house or something like that, and have gone around and tried to get somebody interested enough in it to put up the money to build it, but such cases are negligible in the mass of good work done

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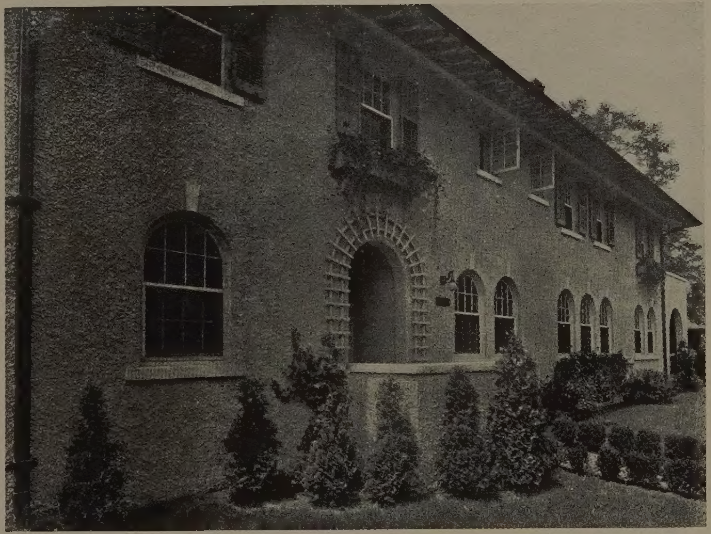
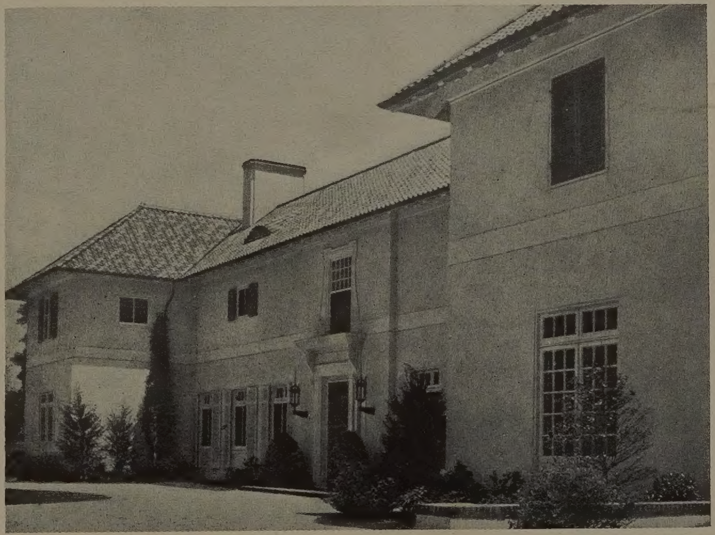
American Architect.



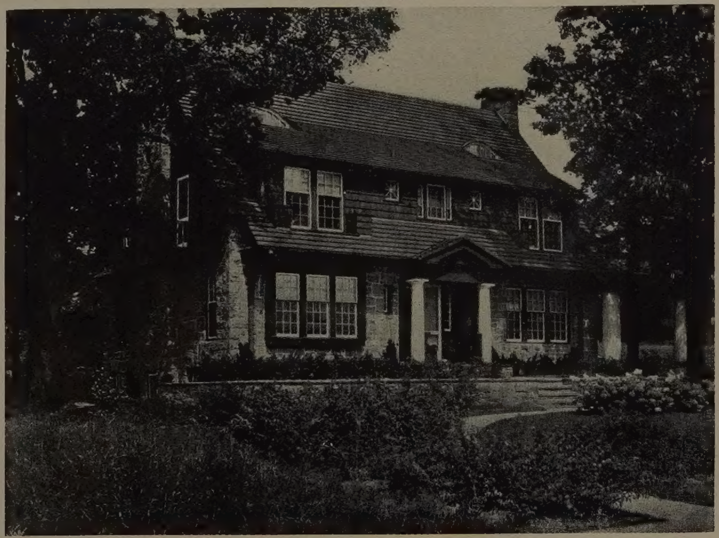
House, Dr. F. J. Hughes, Plainfield, N. J. Wilder & White, Architects.

American Architect



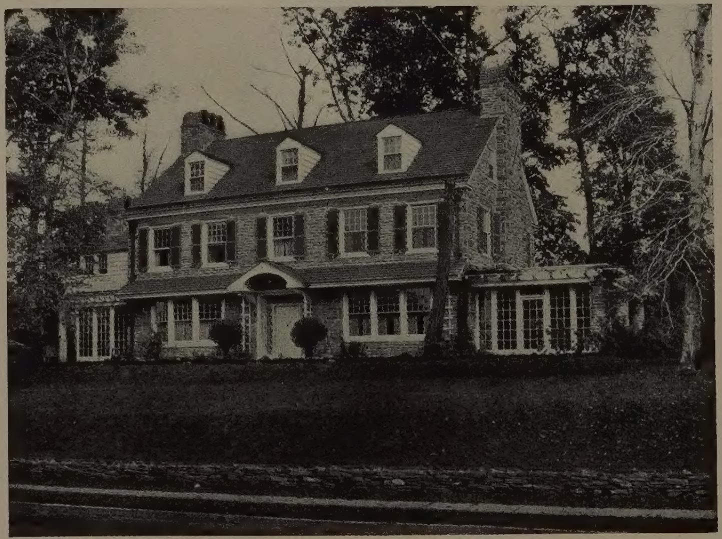
House, Mrs. Ernest Allis, Louisville, Ky. Louis Colt Albro, Architect.

American Architect.



House, W. G. Eckles, New Castle, Pa. W. G. Eckles, Architect.

American Architect.



House, H. T. Saunders, Germantown, Pa. Duhring, Okie & Ziegler, Architects.

MONTHLY PICTORIAL REVIEW SHOWING THE BEST WORK PRESENTED BY OUR CONTEMPORARIES.

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in the usual way. Architects are given an order which is fastened about with harrassing limitations; the story heights are set; lighting and areas are determined for them; materials are often determined for them; cost inevitably enters in the question of design, and it is a curious kind of an Architect, who, having been given an order, sits down and waits for an inspiration. He pulls up his stool, grabs his tee square and triangle, (likewise his scale and pencil), and hammers it out; sometimes he has to hammer pretty hard and for a very long time before he can get anything passable. Inspiration is pretty scarce among the Architects, and always has been; precedent is a much easier thing to use than inspiration, and it is to precedent that we are indebted for the world's great buildings.

The Cathedral of Cologne is reported to be one of the few Medieval Cathedrals which is completely executed from the original design, and in many ways it is the finest of them all, but its Architect, we can safely believe, did not "create" its very glorious proportions entirely out of his own mind; thorough study and knowledge of preceding forms went into its making, and we can be sure that its design was a laborious and careful process. It was as much a made-to-order building as any building of our time, and no more a creation than hundreds of other buildings in which the Architect, by patient study of proportion, by the perfection of his taste, and by the careful and laborious exercise of his knowledge of proportion, has been enabled to design something a little finer, a little nobler than most of the other work around him.

THE Association of Collegiate Schools of Architecture held its third convention in Washington on November 30th. The meeting was held at the Shoreham Hotel and as usual immediately preceded the convention of the American Institute of Architects, thus permitting attendance upon both meetings by members of the Association.

The organization consists of the representatives of the architectural faculties of the following institutions: Columbia, Cornell, Harvard, Syracuse and Washington Universities; the Universities of California, Illinois, Michigan and Pennsylvania, and of the Massachusetts and Carnegie Institutes of Technology.

The Association was organized in 1912 with a view to bringing about closer relations between architectural schools and to facilitate full discussion of those problems which are shared by these professional schools. The most important step thus far taken is the adoption of minimum requirements for admission to the architectural school and for graduation.

At the meeting of this year particular attention was given to the need of a general survey of all the teaching of architecture, and steps were taken to bring this about. The discussions, which are conducted in the manner of a round table in which all participate, also dealt with courses of study, teaching methods and matters of administration; the standard of judgment in design, and traveling scholarships in the United States.

The officers, who also constitute the executive committee, were re-elected and are as follows: President, Warren P. Laird, University of Pennsylvania; Vice President, Emil Lorch, University of Michigan; Secretary-Treasurer, Clarence A. Martin, Cornell University.

This year, as was the case last year, an exhibition of student work was held under the auspices of the Committee of Education of the A. I. A. The drawings were hung in the Corcoran Art Gallery and were contributed by the schools who awarded the Institute medal during the past year. There was also shown some work from the American Academy in Rome, thus giving an unusual opportunity to compare the methods and results of the various schools. The officers of the Association have tentatively arranged with the American Federation of Art to circulate this exhibit. Requests have been made for it by a number of organizations and institutions. Those desiring information in regard to the exhibit should apply to Miss Leila Mechlin, Secretary of American Federation of Art, The Octogon, Washington, D. C.

THE Architectural League of New York announces that its thirty-first annual exhibition will be held at No. 215 West Fifty-seventh Street, from Sunday, February 6, to Saturday, February 26 inclusive. The hours of exhibition will be from 10 a. m. to 6 p. m., and from 8 p. m. to 10:30 p. m. On Sundays the exhibit will be open from noon until 6 p. m.

The exhibit will be illustrative of architecture and of arts allied to architecture.

Under the auspices of the Architectural League of New York competitions for the Henry O. Avery special $50 prize and a $300 prize will be held. This prize will be awarded for the best design of the interior of a small chapel submitted by an Architect, a sculptor and a mural painter in collaboration before 6 p. m. on January 20. The Avery prize is for sculptor.

BOOK REVIEWS

THE BUILDING ESTIMATOR'S REFERENCE BOOK. 1915. Frank R. Walker, 30 No. Michigan Ave., Chicago. Flexible leather, $10.00.

The building contractor and estimator engaged in computing the costs of our modern buildings must eliminate the item of guesswork from the estimates as far as possible.

The costs given in this book are from the best sources and are thoroughly reliable, as in most cases the author was on the work during construction and compiled all cost data during the progress of the work. In other cases it was obtained from the actual cost sheets coming in from the job each week and compiled at the completion of the work. No cost or data is included that the author is not convinced as being absolutely trustworthy so that the contractor and estimator may refer to it with perfect confidence.

Illustrations are freely used, as the author believes that a good picture is better than a volume of explanation, and for this reason actual photographs, taken during the progress of the work are included to show the conditions existing on the job, the methods and plant employed, through which the labor costs on the various branches of work resulted.

POWER FOR PROFIT. Reginald Pelham Bolton, 1916. R. P. Bolton Co., 55 Liberty St., New York. Cloth, $2.50.

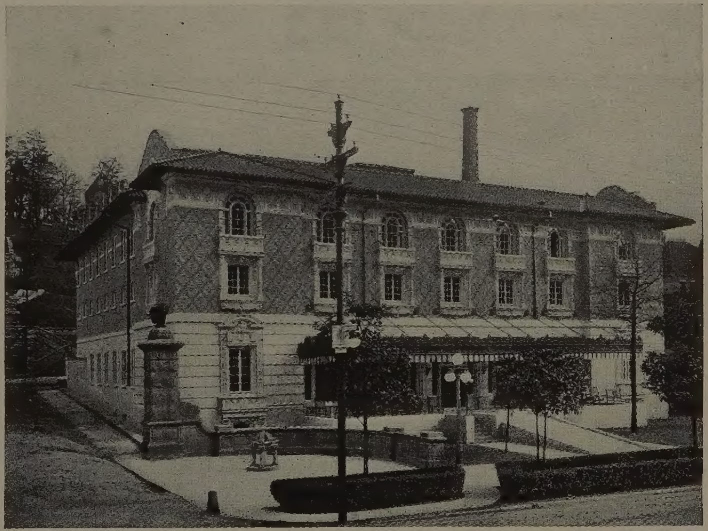
An up-to-date book on a subject of practical value to owners of buildings, operators in real estate, trustees, managers, builders and Architects, presenting in an informing and readable manner, freed from technicalities, the principles governing the use of machinery and labor in modern buildings.

The cost and the life of machinery in modern buildings, and their operating conditions, are analyzed in the interests of income-producing real estate as well as from the point of view of institutions and of municipal ownership.

Analyses are given of the much-discussed value of exhausted steam for heating purposes, and of electric energy regarded as a by-product of steam.

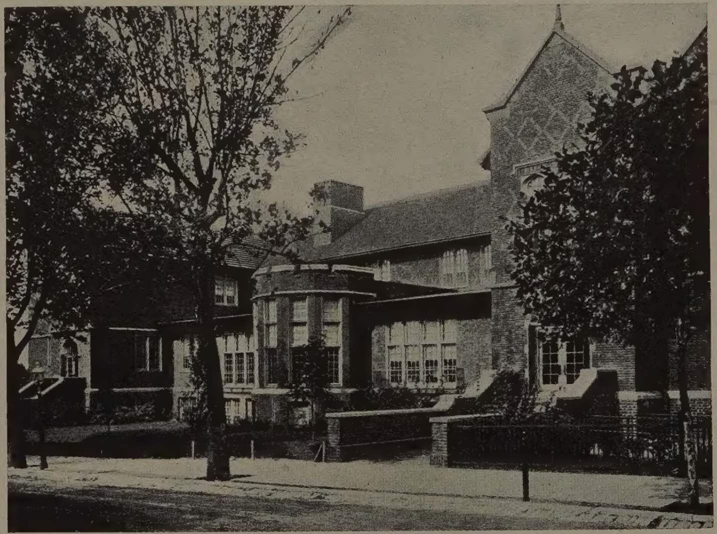
Some of the wastage and negligence which lead to excessive expense in maintaining improved real estate are described. The presentment of the subject is directed towards a reconsideration of existing combinations of machinery by analysis and reduction of such wastages, by the adoption of improved methods and apparatus, or the utilization of public systems of service. These considerations are applied to steam and gas, as well as to electricity.

Brickbuilder.



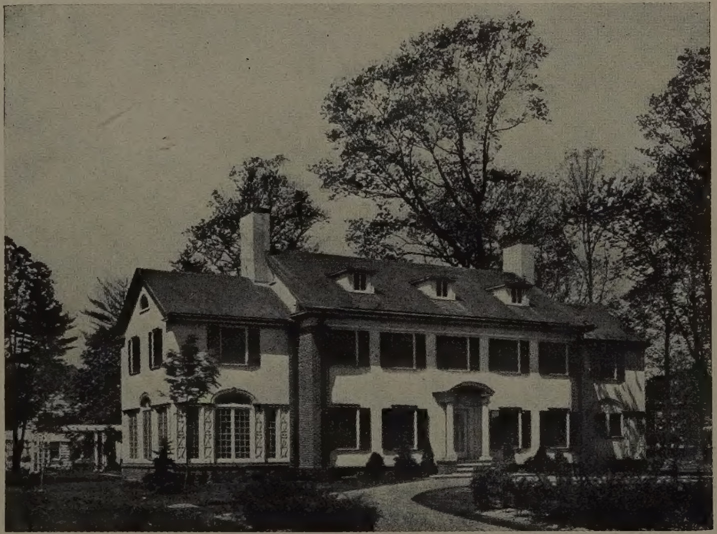
The Fordyce Bath House, Hot Springs, Ark. Mann & Stern, Architects.

Architectural Review.



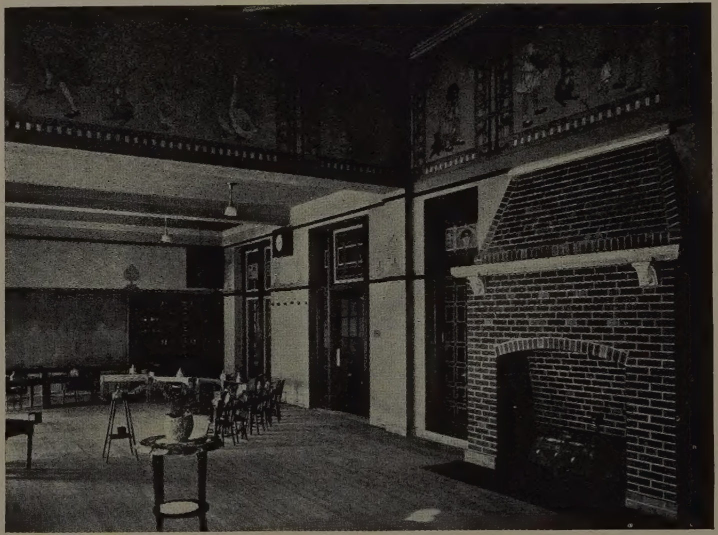
Lyon School, St. Louis. Wm. B. Ittner, Architect.

Architectural Record.



House, J. A. McElroy, So. Orange, N. J. Davis, McGrath & Kiessling, Architects.

Architectural Review.



Kindergarten, Lyon School, St. Louis. Wm. B. Ittner, Architect.

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